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ABSTRACT

Determining whether statistically significant differences occur in the measured achievement of a group of 608 white pupils, 127 Lumbee Indian pupils, and 680 black pupils--from a newly racially integrated North Carolina school system--this study analyzed academic performance with respect to each student ethnic group, each teacher ethnic group, and each student-teacher ethnic combination. The research procedure involved administration of the California Achievement Test to grades 6 through 12 and was readministered with the California Test of Mental Maturity the following spring semester. Findings were that (1) black students performed better after integration than before integration, and white and Indian students experienced no negative effects in achievement; (2) relative to student ability and pretest scores, black students had a significantly higher language and mathematics score; (3) there was no significant difference in how each ethnic group of teachers affected student performance; and (4) there was interaction between the race of the student and the race of the teacher which affected the students' academic achievement in language. Twenty-one tables, 17 figures, and 28 references are included. (Author/MJB)

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ACADEMIC PERFORMANCE AND SCHOOL INTEGRATION:

A MULTI-ETHNIC ANALYSIS

by

Waltz Maynor

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Education in the Department of Education in the Graduate School of Arts and Sciences of Duke University

1970

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ABSTRACT

ACADEMIC PERFORMANCE AND SCHOOL INTEGRATION:

A MULTI-ETHNIC ANALYSIS

by

Waltz Maynor

The major thrust of this study is to determine whether statistically significant differences occur in the measured achievement of a group of black, Indian, and white children in a newly racially integrated school system. Academic performance will be analyzed with respect to:

1. Each student ethnic group
2. Each teacher ethnic group
3. Each student-teacher ethnic combination (that is, white teacher-black student, etc.).

This study was conducted in the public schools of Hoke County, North Carolina. Hoke County is a rural County of approximately 17,000 persons and is located in the southern part of North Carolina. The racial composition of the county is about 35% white, about 50% blacks, and about 15% Lumbee Indians.

The research procedure involved the administration of the California Achievement Test to grades six through twelve in October of 1968. This provided base-line information against

which student progress was measured. The California Achievement Test was readministered along with the California Test of Mental Maturity at the close of the spring semester of 1969. The subjects of this study include all pupils who completed both testings of the California Achievement Test and the California Test of Mental Maturity. This sample consists of 608 white pupils, 127 Indian pupils, and 680 black pupils, a total sample of 1,415 pupils.

To test the hypothesis, student achievement scores were analyzed across grade levels. Grade equivalent scores were converted to standard scores, mean 50 standard deviation 10, at each grade level for all races combined. The analysis of covariance was used to compare post-test achievement scores, adjusted for intelligence and pre-test achievement scores, for each student-teacher racial pairing.

The findings were:

1. Black students performed better after integration than they did before integration. White and Indian students experienced no negative effects in achievement from integration.
2. Relative to the students' ability and pre-test scores black students had a significantly higher language and mathematics score.
3. Relative to the students' ability and pre-test scores there was no significant difference in how each ethnic group of teachers affected student performance.
4. Relative to students' ability and pre-test scores,

there was interaction between the race of the student and the race of the teacher which affected the students' academic achievement in language.

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CHAPTER I

INTRODUCTION

As the level of racial integration increases in the public school, both school boards and those professionals responsible for educating today's youth are very much concerned with optimizing academic achievement among multi-ethnic groups.

Some educators fear that integration will result in lower achievement scores among white students and argue that high school classes should be grouped homogeneously according to measured academic achievement. Homogeneous grouping in most classes would tend to segregate the pupils. These groups are apprehensive about placing black students, who have an average disparity of one to four years in grade equivalent scores, in the same class with whites, who are correspondingly one to four grade equivalent scores above the blacks in achievement. The major question is: whether or not black students who have significantly lower measured achievement scores can be taught in the same classroom with higher-achieving whites without a loss to either. There is the general fear that as blacks gain, whites will lose academically.

A second question is whether the race of the teacher

has any effect on the academic performance of the students. School boards and educators ask if students will achieve as well with black, Indian or white teachers. Educators now experiencing social change are anxious to determine whether or not teachers from different racial backgrounds are equally effective in teaching.

Another question of interest is whether or not black students experience more achievement growth when taught by black, Indian, or white teachers. The same question may be asked concerning each racial group. Administrators could more adequately develop and execute a school program directed toward the fulfillment of every child's talents and abilities if they had knowledge of how all racial pairing of students with teachers affected the academic performance of the child.

The major thrust of this study is to determine whether statistically significant differences occur in the measured achievement of a group of black, Indian, and white children in a newly racially integrated school system. This study will consider the academic performance of black, Indian, and white students in an integrated school setting with teachers from each of the three racial groups. Academic performance will be analyzed with respect to:

1. Each student ethnic group
2. Each teacher ethnic group
3. Each student-teacher ethnic combination (that is, white teacher-black student, etc.).

Also shown in the study will be:

1. Graphs of achievement patterns for the school system by grades.
2. Graphs of achievement patterns for each race in the school system by grades.
3. A comparison of the achievement patterns of each race in the school system before and after integration.
4. A comparison of the achievement patterns of each race for students who have been retained in at least one grade with students who have never been retained.
5. A comparison of the achievement patterns of each race by sex.

The formal hypotheses of this study are:

1. relative to the students' ability, there will be no statistically significant difference between ethnic groups in the academic performance of the students
2. relative to the students' ability, there will be no statistically significant difference in how each ethnic group of teachers will affect student performance
3. relative to the student's ability, there will be no statistically significant interaction between the race of the teacher and the race of the student which will affect the student's academic achievement.

This study was conducted in the public schools of Hoke

County, North Carolina. Hoke County is a rural county of approximately 17,000 persons and is located in the southern part of North Carolina. Raeford, the largest town and the county seat of Hoke County, has a population of approximately 5,000 people. The racial composition of the county is about 35% whites, about 50% negroes, and about 15% Lumbee Indians.

The investigation is concerned with the academic performance of the three races in integrated schools. Inference concerning variables such as motivation, psychological adjustment, socio-economic factors, et cetera, is not within the scope of this study.

CHAPTER II

REVIEW OF THE LITERATURE

Much of the literature on the testing of academic achievement among multi-ethnic groups centers around the performance of blacks and whites in separate educational facilities. Fewer studies have been reported concerning the educational achievement of various ethnic groups in integrated school settings.

Comparative Academic Achievement of Ethnic Groups in Segregated Schools

The early studies of achievement differences between blacks and whites in segregated systems showed common results. Witty and Decker (1927) tested 220 black children and 1,725 white children of chronological ages 7 to 13 inclusive and found that, generally, younger black students more nearly reached the educational status of white children than did older ones on every section of the Stanford Achievement Test. In subject areas, the black children more closely approached the whites in history, literature, and arithmetic, while language usage and reading were the black student's poorest areas. Witty and Decker calculated that only 14.5% of the black children in this

sample reached or exceeded the median educational age of the white children in the sample. In 1930, Garth, Lovelady, and Smith found similar results when they tested 900 black boys in urban schools of Oklahoma and 1,106 black girls in public schools of Texas, ranging in chronological age from 6 to 20 years. School grade placement ranged from fourth grade through the ninth grade. The test used was the Otis Classification Test, the first part of which is a test of general educational achievement, and the second part an intelligence test. The test results showed that the mental growth line (IQ plotted over time) of these Negro children began at practically the same point as the whites in the sample but showed marked educational retardation as the children increased in age. Since the investigation found a .81 correlation between intelligence and achievement, it was suggested that the achievement ratio followed the same pattern as the mental growth line.

In a study conducted by Wilkerson (1934) the Stanford Achievement Test, the Nassau-Hillegas Composition, and other basic skills tests were completed by Maryland, Virginia, and West Virginia black and white school children. Wilkerson found blacks below the whites in educational achievement in the same grades and school systems. Using the Stanford Achievement Test revealed generally uniform differences between the achievement of the two races in individual subject areas. The disparity between the races in scholastic achievement varied markedly among different school systems and between rural and urban schools in the same state.

Wilkerson (1934) continued the survey of the academic performance of black students relative to white students in Clarke County, Georgia. In comparing Clarke County statistics to other school academic statistics of the state, Wilkerson concluded that black children, in general, achieved on a lower level than white children in the same grades and school system.

In 1931, Farr (1931) also found black student's scores on standardized achievement tests to be lower than the scores of whites. He used the Illinois Intelligence Test, Monroe's General Survey Scale in Arithmetic, and Monroe's Standardized Silent Reading Test to test 200 black children in a Mississippi school system. Test results showed that reading achievement scores earned by blacks were below the reading achievement scores earned by whites in the sample.

An Atlanta survey and a Washington, D.C. survey were conducted by Stallings (1960). In Atlanta, he completed tests to 6,500 fourth graders, 6,000 sixth and eight graders and 3,000 twelfth graders in 66 white and 31 black schools. With the use of the Stanford Achievement Test, Stallings made a school by school comparison of the scores. The white school with the highest average achievement in reading at 6th grade level showed a median grade equivalent score of 8.5, while the white school with the lowest average achievement in 6th grade had a median grade equivalent score of 3.8. Among black schools, the highest 6th grade median grade equivalent score was 4.4 and the lowest median grade equivalent score was 2.6.

In the Washington, D.C. survey, Stallings (1960) observed

that prior to integration, 1953, the median grade equivalent score in reading for the 6th grade in the white schools was 7.2. In 1954 when test results for all 6th graders, black and white, were reported together, the median grade equivalent score was 4.9. This lower median grade equivalent score did not represent a loss by whites but reflected the fact that the black pupils, who constituted over 60% of those tested, were below the whites and thus brought the median achievement score down.

The Congressional Subcommittee Hearings on the Public Schools of the District of Columbia (1957) revealed the same trend of lower achievement scores for the black school children. The Stanford Achievement Test results showed third grade black students already one full grade below the national average. Eighth grade reading scores showed black students 4 grades and 1 month behind whites who were tested. In eighth grade arithmetic reasoning, black school children were 2 grades and 8 months behind whites. Arithmetic-Computation scores showed that blacks were 2 grades and 5 months behind the white sample. These findings further revealed that the higher the grade level the wider the disparity between the achievement scores of the white and the black students. The District Hearings re-enforced the Stallings (1960) survey as well as earlier studies (1927, 1930) which showed that the farther one moves up the educational ladder in segregated systems, the greater are the achievement differences of white and Negro pupils.

This progressively widening difference in achievement scores between black and white school children was evidenced in

a later report by R. T. Osborne (1960). He administered the California Achievement Test and the California Test of Mental Maturity to 815 white subjects and 446 black subjects in one county of a southeastern state. They were tested over a four-year period in 1954, 1956, and 1958 when the children were in grades six, eight, and ten respectively. Longitudinal comparisons of arithmetic skills, of reading skills, and of mental maturity were made. The results obtained showed that the black-white achievement differences of almost two years at grade six increased steadily until grade ten where the difference in the reading levels between the two groups was over three school grades. However, the overlap in achievement between blacks and whites in the sample was less at the tenth grade level than it had been at the 6th grade level. In arithmetic at grade six black and white differences were just over one grade; by the tenth school grade, this difference between black and white achievement scores had increased to over 4 years in grade equivalent scores. This study confirmed the results of both the Atlanta Study and the Washington Study. He showed that under a segregated plan, proportionately more of the white pupils in the sample than black pupils met standards set by the top 50% of the national test group. There was a difference in the achievement scores of the black and white groups and this difference became more pronounced in the higher grades than in the beginning grades. "The California Achievement Test data revealed a continuation of the trend, so clearly noticed in 1960, for Negro children to continue to fall

behind academically, such that the amount of retardation at the tenth grade level is severe. The children are in a serious academic difficulty when compared with the national normative sample." (Kennedy, p.29)

Recent studies of academic achievement between black and white children have found the same results as the tests of earlier research. The National Center for Educational Statistics (1967) presented data showing greater disparity in achievement scores between whites and blacks in grade 6 than in grade 12. The Sequential Test for Education Progress was used. In reading comprehension, sixth grade black children were 3.0 years behind the white sample, and twelfth grade black students were 3.4 years behind the white sample. In verbal ability, sixth graders were 2.0 years behind the white sample and twelfth graders were 3.8 years behind the white sample. Mathematics test results showed sixth grade black students 2.5 years behind the white sample. As grade level increased, the differences in mean achievement test scores between white and black groups became more pronounced.

The U. S. Commission on Civil Rights Reports (1967) found sixth grade black subjects in a California school system behind white subjects in reading by 1.7 years. At grade 3 the disparity was slightly less than 1 grade equivalent.

In summary, the literature consistently points to a difference in achievement between the black and white subjects in segregated systems, with the white students having the higher achievement scores. The disparity varies between school systems

and between rural and urban areas but show little tendency to vary with any subject area. However, as the grade level of the student increases greater differences between the achievement scores of the two races are observed.

Attempts to Optimize Educational Achievement Among Ethnic Groups

Because of the lower achievement scores of black students, school board members and educators became concerned about optimizing educational achievement for minority groups. Methods of compensating for the achievement differences between ethnic groups were investigated and practiced.

Beginning in September, 1962, the Syracuse board of education, under the direction of the Superintendent, sponsored a program of compensatory education in three predominanty non-white schools, (Jaquith, 1962). They used small classes, special instructional materials, extra guidance counselors, remedial specialists; however, no measurable improvement in academic achievement was demonstrated.

The largest compensatory program evaluation study was brought together by the U.S. Commission on Civil Rights (1967) in Racial Isolation in the Public Schools. The Commission (1967) reviewed the Banneker Project in St. Louis which was one of the largest compensatory projects in the nation. The project began in the 1957-58 academic year, and during 1965-66 involved 23 majority-black elementary schools which enrolled more than 14,000 students. When the program started in 1957-58, the

average eighth-grade reading scores in Banneker schools were about a year below national norms. By the 1960-61 school year, after the program had been in existence for three years, Dr. Samuel Shepard, the program's director and superintendent of the Banneker School District, reported that eighth-grade reading levels at the Banneker schools had shown a noticeable improvement. They were, on the average, only one-half year below the national average. A comparison of eighth-grade reading test scores in subsequent school years, however, showed this gain was not sustained. In 1965-66 eighth-grade students were tested (the test was given in January; national norm was 8.4-8.5). Two of the 15 Banneker schools with eighth-grades had grade equivalent scores of 6.0-7.0; nine had grade equivalent scores of 7.1-7.5; and four had grade equivalent scores of 7.6-7.8. The majority of Banneker schools then were a year or more below the national average.

It also was possible to compare the academic standing of the Banneker schools with that of other nearly all-black and nearly all-white schools, between 1962-63 and 1965-66. During these years the relative standing of most Banneker schools did not improve. In 1962-63, the eighth-grade reading level of about 20% of the Banneker schools was at or above grade level. This was comparable to other nearly all-black schools. In that year,

however, only a few nearly all-white schools were below grade level; most were at or above grade level. By 1965-66, none of the Banneker schools was at or above grade level and most of them were about a year below grade. These data suggest that the initial gain in the Banneker schools had not been sustained relative either to national norms or other schools in the system.

The Commission on Civil Rights (1967) also reviewed an experimental project, the Demonstration Guidance Project, which began in 1956 at a Harlem Junior high school in which a majority of the students were Negro and Puerto Rican. The annual per pupil expenditure in this school was increased $250 above city average. The project served about 717 seventh, eighth, and ninth grade students who showed academic potential. An evaluation of the program found that 147 of 250 students who had begun the project in seventh grade gained on the average 4.3 years in reading achievement after 2.6 years of the program at the junior high school. In the light of the success of the Demonstration Guidance Project, the Higher Horizons Program of New York City was initiated in 1959. Some 12,000 children, mostly black and Puerto Rican, from 31 elementary schools and 13 junior high schools--most of which were predominantly Negro--were included. By 1962, the program included 64,000 children from 52 elementary schools, 13 junior high schools, and 2 senior high schools. The annual per pupil expenditure was $50 to $60 above city averages. Five years after the Higher Horizons Program had been inaugurated, New York City

school administrators evaluated the program's impact upon the performance of students. Students in schools with Higher Horizons programs were compared with students who had suffered a similar lag in achievement but who continued to attend schools without compensatory education programs. The investigators found no significant difference in academic achievement; in three school years both groups had gained only about 2 years in reading achievement. Third-grade grade equivalent reading comprehension scores for the experimental group averaged 3.59 compared to 3.54 for the control group. By the sixth grade, the reading grade equivalent scores for the experimental group averaged 5.51 as compared to 5.65 for the control group. According to the findings of this program, compensatory attempts were not successful in increasing the achievement scores of the target population.

The U.S. Commission on Civil Rights (1967) reported the findings of four other evaluations. At Central Junior High School in Greenwich, Connecticut, an individual development program was begun in July, 1964. A nearly all-white group of underachieving seventh-graders was given a special reading course. At the end of a year, 76 percent of the experimental and 23 percent of the control groups gained 1-3 years in reading achievement.

In Oakland, California, results of a third and fourth grade language program in 1962-63, for a predominantly black group of children, showed gains in reading achievement significant at the .05 level for three of four experimental groups as

compared to controls. Thirty-five children from the three successful groups were studied a year after the program ended. They continued to be ahead of the control group. The difference was at the .01 level of significance. The program was given to another predominantly black group in 1963-64. At the end of the year, experimental children had gained about 1.5 years in grade equivalent scores in reading achievement as compared to 1.0 years for control children.

The Commission (1967) also evaluated two 1-year programs for Negro and Mexican-American primary school children in Fresno, California in 1963-64. Children in second and third grade, achieving less than expected, gained 9 months in reading as compared to 6 months for controls. Experimental second-graders achieved 1.4 years as compared to 1.0 years for controls. The second program, the extended day reading program in 1964-65, showed no significant gain for experimental over control children. The second testing program discarded the Hawthorne Effect as an influence upon the 1964-65 sample.

From 1962-1966 the Berkeley, California school system instituted compensatory programs at four majority-black schools. They reduced class size, employed special staff, improved teaching materials, used tutoring, after-school study halls, preschool programs, flexible class grouping methods, new teaching techniques and intergroup education for the teaching staff. Achievement test scores at predominantly black schools with compensatory programs reflected no improvement in achievement of fifth-grade students over a three-year period. Fifth

grade students in 1965, after four years of compensatory programs, showed no greater achievement gains than 1962 fifth-grade students in the same schools. Neither was there any change in the fifth-grade reading level at predominantly white schools over the three years. As in other cities, Berkeley's hopes for compensatory education programs showed no statistical improvement in student achievement.

Evaluation of the "More Effective Schools" program in the New York City elementary schools in 1964 also revealed that where positive effects on achievement were seen, the gains were not sustained beyond the first year.

The Commission found no sustained academic improvement in these various programs and concluded (p.139) that:

> ...the compensatory programs reviewed here appear to suffer from the defect inherent in attempting to solve problems stemming in part from racial and social class isolation in schools which themselves are isolated by race and social class.

It is clear that there is little hard data on compensatory education programs that result in lasting gains in academic achievement. The evidence is more ambiguous than negative or positive. It would appear, however, that the only way to insure effective compensatory benefits is to have comprehensive high expenditure programs as evidenced by the Harlem Demonstration Guidance Program.

Without high expenditures, the evidence reviewed here strongly suggests that compensatory programs do not succeed in racially and socially isolated school environments.

Comparative Educational Achievement Among Desegregated Ethnic Groups

Studies of achievement growth and of scores for verbal abilities indicate clear and consistent differences between measured achievement of blacks, whites, and other ethnic groups in separate educational settings. It has been argued that these differences in performance were at least partially due to the existence of separate facilities. After the Supreme Court decision of 1954, and the beginnings of enforcement of integration, interest in educational achievement differences among multi-ethnic groups became more than academic. Some school board members, educators, and citizens feared that mixing black students with white students of relatively higher performance would pull down the levels of achievement of the white students. The literature concerning the achievement of blacks and whites in integrated settings does not lend credence to such fears.

Stallings (1959) measured the change in Negro and white achievement that took place immediately following the implementation of the Louisville, Kentucky plan for integration. 10,000 white students and 3,000 black students in the second, sixth, and eight grades were pre and post tested within a one-year interval. The results of the tests revealed that the scholastic achievement of neither the white pupils nor the black pupils suffered during the initial period of integration; instead, there were substantial gains in both races with the blacks making proportionately the larger gains.

Another study conducted by Stallings (1960) in the schools of Washington, D.C. supported the preceding Louisville study. During the testing intervals from 1955 to 1959, city-wide tests were given to compare with test results taken before integration. The 1958-59 tests showed the sixth grade median to be at or above national norms in five out of six sections of the test battery. By this same year the third graders were within either three or four months of the national norm in all subjects tested, and the average rise in these subjects over the 1955-56 figures was seven months. During this period of improvement the percentage of black pupils increased sharply. In grade three, for example, the percentage of black pupils rose from 66.3 percent in 1955-56 to 79.1 percent in 1958-59, and at the sixth grade levels the percentage of black students rose from 63.9 percent to 75.6 percent. Thus, academic achievement rose at the same time as the proportion of black students rapidly increased.

Further research in the schools of Washington, D.C. was reported by Hansen (1960). He compared achievement tests given to the same grade level black and white students before integration and after integration system-wide. Repeated measurement was also used to show that the grades of the two groups of students were nearer the national norms after three years in integration than they were at the beginning of the integration process. After observing and measuring the performance of white students, Hansen concluded that integration had shown no retarding effect on the learning of the white pupils in the schools.

In terms of measured achievement, white pupils performed at least as well during the five years of integration as did such pupils during the years immediately preceding integration of the schools.

In Syracuse, New York, Jaquith (1962) tested a randomly selected group of first, second, and third grade non-white students. The experimental group was bussed out to a white school while the control group remained in a predominantly non-white school. The experimental group of non-white bussed subjects improved significantly in reading. Similar increases in achievement scores for black students were found by Jaquith when Syracuse junior high students were also transferred. Jaquith found that the 24 black children who were bussed to majority-white schools achieved a total of 9.2 months' progress in reading in one school year while their matched counterparts in the predominantly black school gained only 4 months.

The Commission on Civil Rights (1967) reviewed the bussing procedures of the Berkeley School System in 1965-66. 230 black children were bussed from a majority-black school to majority-white schools. After testing bussed children in the third, fourth, and sixth grade at the beginning and at the end of a six-month period, test results showed that the bussed children progressed at a more rapid rate than the children in the majority-black schools where compensatory education was being tried.

The benefits of desegregation compared to compensatory education were reviewed in a study conducted by the Seattle

Public Schools in the 1965-66 school term, 242 black children were transferred from two majority-black schools to four majority-white schools. Children remaining in the predominantly black schools received intensive compensatory education. The test scores of 38 transferred first-graders were compared with the scores of 25 first-graders who received compensatory education. Reading test scores at the beginning and at the end of the second grade showed that the transferred group achieved slightly more during the year than the group receiving compensatory benefits.

The Commission (1967) compared the performance of the black students in the Educational Improvement Program in Philadelphia with the performance of black students of higher social class in nearly all-black, non EIP schools and black students bussed to majority-white schools. The third grade median reading level of the bussed students had surpassed that of the EIP students and had equalled that of the students of higher social class in predominantly-black schools with no EIP program. Cline, the director of the analysis, concluded that the children bussed to predominantly white schools increased their rate of development in reading over time and achieved significantly more than the EIP children. Cline continued that "it appears from the data that integration tends to free the potential for educational growth in many children, whereas, segregation tends to restrict that potential."

The investigations reviewed here consistently found that the black student gains significantly from integration with no

negative effects for the whites.

The Effect of School Social Class Upon Achievement

The social class level of a student's classmates and his academic performance appear to be related. Several studies have suggested that minority children especially are influenced by the attributes of other children with whom they attend school.

In a study performed by Wilson (1966) of Richmond, California students, the relationships between a student's social class and his school achievement were studied. In considering the relative importance of individual and school social class for white and black students separately, it was found that the student environment had a stronger relationship to the performance of black students than did the student's own family background. White students' performance, although strongly related to the social class level of the fellow students, was more closely related to the student's own family background. Wilson found that the average sixth grade reading level of children who had attended primary schools with fewer than 10% lower class children was 7.4 years. In contrast, children who went to school where a majority of their classmates were lower class averaged only 4.9 years in the sixth grade. Wilson also pointed out that the effect of social class upon the student's performance grows stronger over time. In his eighth grade test sample, Wilson found a sharp increase in the effect of school social class composition upon achievement. A multivariate analysis

showed that, allowing for variations in primary-grade mental maturity, the social class composition of the primary school had the largest independent effect upon the sixth grade reading level. In trying to assess the effects of social class upon blacks, Wilson concluded that the social class composition of the school had a systematic effect on the achievement of Negroes but not as much on whites.

Coleman's (1967) investigation [one of the most extensive surveys on achievement ever done] is consistent with the findings of Wilson. Test results of school subjects across the nation revealed that black students were more sensitive to variations in the school environment than were the white students. Coleman found that attributes of other students accounted for more variation of the achievement of minority group children than attributes of school facilities and slightly more than attributes of staff. In general, test results showed that as social class composition of the school brightened, the achievement scores of minority group children increased. Coleman also included data to show that this relationship of social class and performance was enhanced over time. In grades 1 and 3 of the Coleman survey, little variance was accounted for by school characteristics or peer relations; however, in grades 6, 9, and 12 the greater importance of student body characteristics became evident. Test data further indicated that whites and oriental Americans, the highest achieving groups, showed generally less dependence on characteristics of fellow students than the other groups.

Another approach to this problem was taken by Armor (1963). He prepared a study for the Commission on Civil Rights to determine whether college aspirations in a higher social class composition affected black students' performance in majority-white schools. He found no consistent relationship between students' aspirations and the advantaged black students' academic achievements. However, the integration of high-ability disadvantaged blacks and higher achieving and higher aspiring whites did show a significant relationship. Test results showed integration helpful to disadvantaged black students. The Coleman study pointed out that this relationship was true for disadvantaged whites as well. Coleman also pointed out that the academic performance of advantaged blacks also varied with the social class composition of the schools. This tendency held true for advantaged whites as well. Thus, Armor (1963), Coleman (1966), and Wilson (1966) agreed that disadvantaged students--especially blacks--were more strongly influenced by the student environment than were advantaged students and that this relationship increased over time.

Regional Differences and Academic Achievement

Another factor which seems to be related to achievement is the region of the country in which a student lives.

Coleman (1966) made an extensive survey of achievement and integration across the nation. Regional differences appeared to be an important consideration in his study. He used white

students of the Northeast as a standard of comparison for the whites and other racial and ethnic groups in the nation. Coleman measured sixth grade black and white students in reading comprehension and found black students from the Northeast to be 1.8 years (grade equivalent) behind the white students from the Northeast. He found that sixth grade black students from the Metropolitan south, southwest, or west were 2.1 years behind the Northeast whites. Sixth grade Indians showed 2.0 years behind the Northeast whites. Southern whites were 0.3 years behind the Northeast whites. In general the difference between the metropolitan black and the metropolitan white students in reading comprehension was about the same regardless of the section of the country from which they came. Southern white sixth grade students from rural areas showed a 0.5 year lag behind Northeast whites. Negro southern rural sixth grade students showed a 2.7 years' lag.

Coleman tested twelfth grade students in reading comprehension, also using the Northeast whites as the standard of comparison. He found that twelfth grade black students from the Northeast were 2.9 years behind the local whites. In the metropolitan mid-west, twelfth grade blacks were 2.5 years below the whites from the metropolitan Northeast. In the metropolitan South, the twelfth grade black students were 3.7 grade equivalent scores behind the Northeast whites. In the metropolitan Southwest, the black students' scores were 3.9 years below the Northeast whites' scores. The disparity between rural Southern blacks and the Northeast whites was 4.0 years.

In the rural Southwest, the twelfth grade American Indians were 3.2 years behind the Northeast whites.

In mathematics achievement, Coleman found similar differences. Twelfth grade black students from the Northeast were 5.2 years behind the Northeast whites. The difference between the scores of metropolitan mid-western blacks and Northeast whites was 4.6 years. Black students from the metropolitan South measured 4.4 years below the Northeast white students. The black students in metropolitan Southwest were 5.1 years behind the whites in the Northeast. Similar differences were seen in the rural South and Southwest where scores of black students in both areas showed 4.8 years behind the Northeast whites. In the rural North, the scores of black students showed a 4.4 lag behind the scores of the Northeast whites.

In sixth grade mathematics achievement, Coleman found that black students were about 2.0 grade equivalent scores behind the white students regardless of the region of the country being considered. American Indian students were also about 2.0 years behind the Northeast whites in mathematics.

Coleman's study shows a disparity among white students' reading and arithmetic scores and the scores of other racial and ethnic groups, if the region of the nation in which the student lives is considered.

CHAPTER III

METHODS AND PROCEDURES

In 1967 a desegregation institute was held in Hoke County, North Carolina, where separate schools were maintained for three ethnic groups: blacks, Indians, and whites. In September, 1968, grades six through twelve of the Hoke County Schools were opened on an integrated basis, combining both student bodies and faculties.

This action provided a unique opportunity to study the effects of integration on the academic performance of students of each ethnic group. In addition, it was possible to study the differences in response of students of each ethnic group to teachers of the same and other ethnic groups.

All programs and classes in Hoke County are integrated, with most classrooms including about the same proportion of students of each race as the school population. The teaching staff is integrated, containing about the same percentage of each race as the school population. Each teacher in the system has students who are members of each of the three racial groups. Hoke County students in grades six, seven, and eight attend Upchurch school, which was previously the county black high school. Students in grades nine, ten, eleven, and twelve at-

tend Hoke High School, which was previously the white high school. The County Indian high school, South Hoke, was converted to an elementary school.

The research procedure involved the administration of the California Achievement Test in grades six through twelve in October of 1968. This provided base-line information against which student progress was measured. The California Achievement Test was readministered along with the California Test of Mental Maturity at the close of the spring semester of 1969. The subjects of this study include all pupils who completed both testings of the California Achievement Test and the California Test of Mental Maturity. This sample consists of 608 white pupils, 127 Indian pupils, and 680 black pupils, a total sample of 1415 pupils.

Pre and Post test grade equivalent scores were analyzed by grade and subject area for: (1) all races together, (2) each ethnic group, and (3) whether the student had been retained in at least one grade or had never been retained. Post-test grade equivalent scores were analyzed by the student's sex.

In comparing the achievement patterns of each race in the school system before and after integration, a slope of a linear least-squares-fit line of grade equivalence on actual grade placement was found for the pre-test and was found for the post-test. The two slopes were compared for statistically significant differences.

In order to test the hypothesis, student achievement scores were analyzed across grade levels. Grade equivalent

scores were converted to standard scores, mean 50 standard deviation 10, at each grade level for all races combined. The analysis of covariance was used to compare post-test achievement scores, adjusted for intelligence and pre-test achievement scores, for each student-teacher racial pairing.

CHAPTER IV

RESULTS AND DISCUSSION

California Test of Mental Maturity mean scores, standard deviations, and the number of students for grades six through twelve by each race and for the total group of students in the study are presented in Table I.

Table I reveals that there are 608 white students, 127 Indian students, and 680 black students for a total of 1415 students in the study. The mean score on the California Test of Mental Maturity of all races combined is 89.7. The mean score for each race is: blacks 78.1, Indians 82.4, and whites 104.2. As the grade level increases for Indian and white students so does the mean score on the California Test of Mental Maturity. As the grade level increases for black students, the mean score on the California Test of Mental Maturity decreases.

TABLE I

CALIFORNIA TEST OF MENTAL MATURITY, MEANS, STANDARD DEVIATIONS,
AND NUMBER OF STUDENTS FOR GRADES 6 THROUGH 12,
BY RACE AND TOTAL GROUP

	WHITE			INDIAN			NEGRO			TOTAL		
GRADE	N	MEAN	S.D.	N	MEAN	S.D.	N	MEAN	S.D.	N	MEAN	S.D.
6	99	102.8	14.5	24	80.9	12.3	131	81.3	14.0	254	89.6	17.5
7	87	101.3	16.8	24	85.9	18.9	113	79.8	14.6	224	88.8	18.8
8	98	104.3	15.5	24	79.0	16.0	127	76.2	14.3	249	87.5	20.2
9	113	101.9	16.7	22	78.9	19.9	117	79.0	14.3	252	89.3	19.5
10	86	107.0	12.7	14	86.7	14.4	78	77.7	15.2	178	92.6	19.8
11	63	103.8	17.5	11	85.2	18.5	61	73.3	16.6	135	87.9	23.5
12	62	111.7	16.4	8	85.8	20.1	53	75.6	16.6	123	94.4	24.2
TOTAL	608	104.2	15.6	127	82.4	16.8	680	78.1	14.7	1415	89.7	19.9

Achievement Patterns for the School System by Grades

Tables 2, 3 and 4 present pre-test and post-test grade equivalent mean scores and standard deviations for grades six through twelve with all races combined on the reading, language, and mathematics subtests.

Figures 1, 2, and 3 present graphically the mean grade equivalent scores for the pre-test and the post-test grades six through twelve of all races combined on the reading, language, and mathematics subtests.

An examination of tables 2, 3, and 4 and figures 1, 2, and 3 shows that the achievement pattern for the school system, when all races are combined, fall below the achievement pattern for the national norm group. This disparity is greater at grade twelve than at grade six and it is greater in mathematics than in reading or language particularly at grades ten, eleven, and twelve.

These test scores are similar to the test scores of Robeson County, North Carolina where the California Achievement Test was administered in 1969 to 136 black students, 459 Indian students, and 141 white students in grade 10.6. The combined grade equivalent scores were: Reading 8.67, Language 9.17, and Mathematics 8.03.

TABLE 2

CALIFORNIA ACHIEVEMENT TEST, READING SUBTEST, GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS, AND NUMBERS OF STUDENTS FOR GRADES 6 THROUGH 12, PRE-TEST AND POST-TEST SCORES

Grade	Number of Students	Pre-test		Post-test	
		Mean	S.D.	Mean	S.D.
6	254	5.1	1.31	5.7	1.36
7	224	6.3	1.82	7.1	1.91
8	249	6.8	1.97	7.6	2.11
9	252	7.5	2.14	8.0	2.25
10	178	9.2	2.05	9.8	2.17
11	135	9.4	2.25	9.8	2.37
12	123	10.6	2.55	11.0	2.53

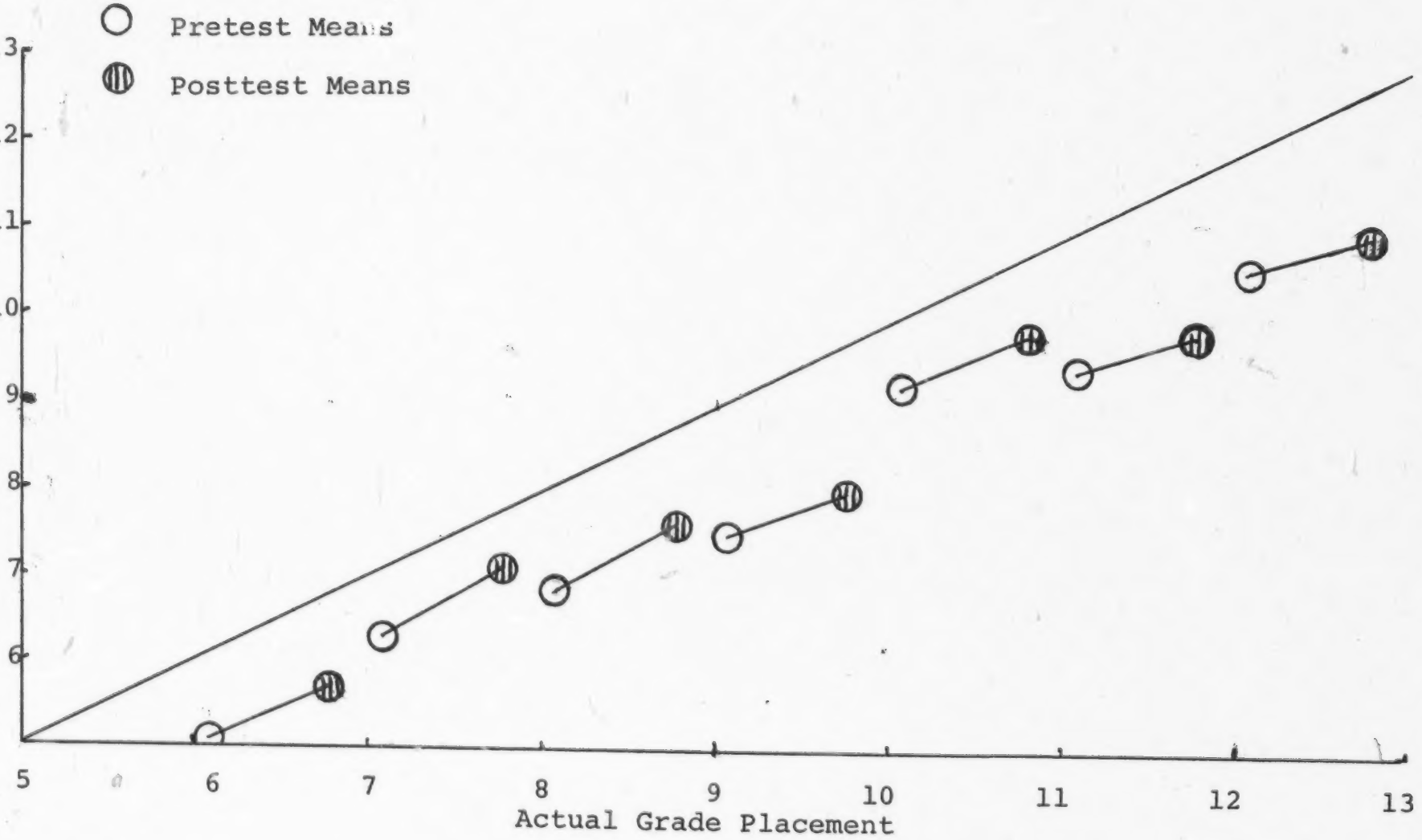


FIGURE 1: CALIFORNIA ACHIEVEMENT TEST

READING

Grades 6 - 12

TABLE 3

CALIFORNIA ACHIEVEMENT TEST, LANGUAGE SUBTEST, GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS, AND NUMBERS OF STUDENTS FOR GRADES 6 THROUGH 12, PRE-TEST AND POST-TEST SCORES

Grade	Number of Students	Pre-test		Post-test	
		Mean	S.D.	Mean	S.D.
6	254	5.2	1.34	5.7	1.41
7	224	6.8	1.84	7.7	1.98
8	249	7.4	2.04	8.0	2.10
9	252	7.8	2.28	8.5	2.26
10	178	9.6	2.24	10.2	2.44
11	135	9.5	2.46	10.5	2.48
12	123	11.2	2.30	11.5	2.35

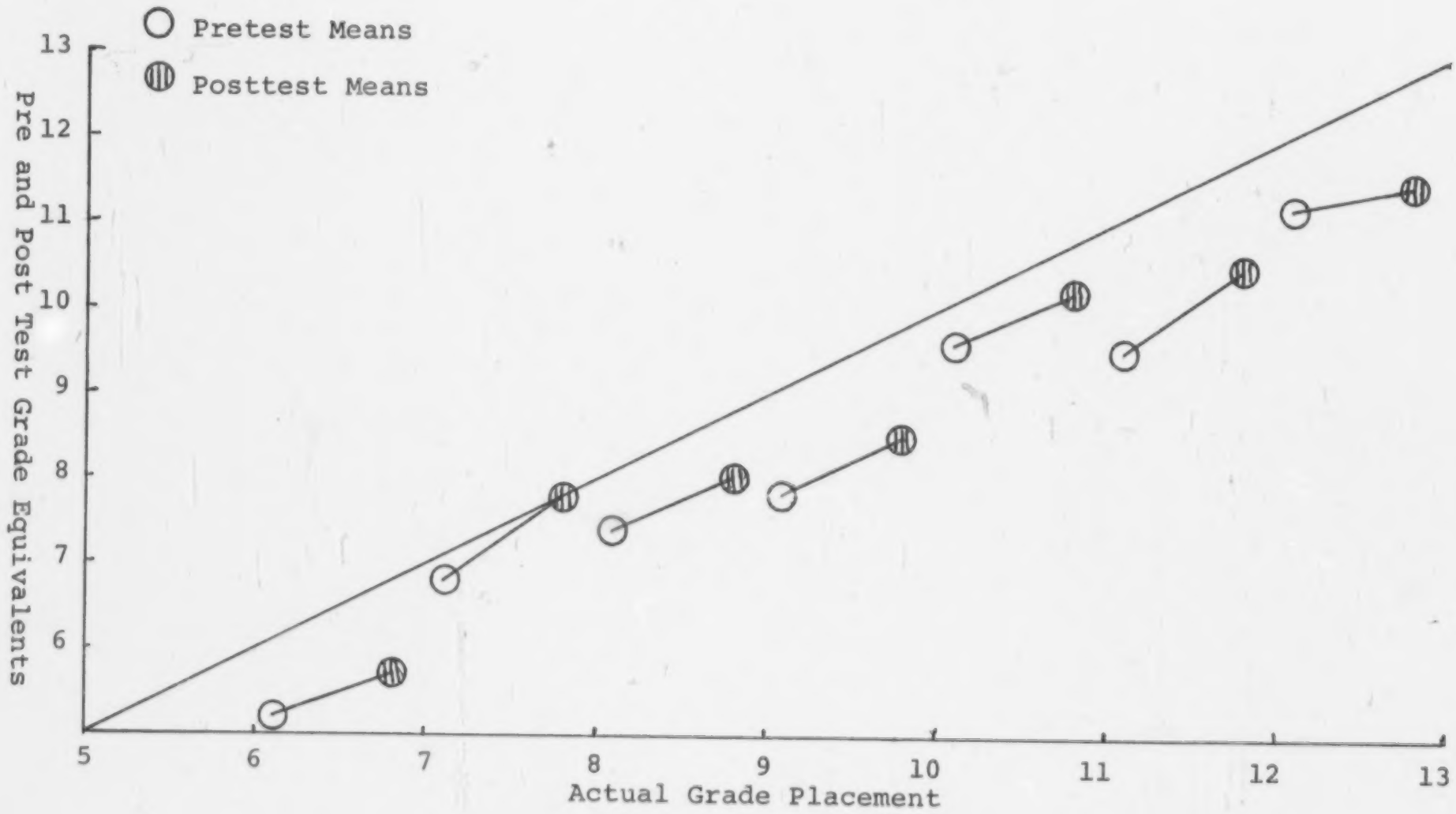


FIGURE 2: CALIFORNIA ACHIEVEMENT TEST

LANGUAGE

Grades 6 - 12

TABLE 4

CALIFORNIA ACHIEVEMENT TEST, MATHEMATICS SUBTEST, GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS, AND NUMBERS OF STUDENTS FOR GRADES 6 THROUGH 12, PRE-TEST AND POST-TEST SCORES

Grade	Number of Students	Pre-test		Post-test	
		Mean	S.D.	Mean	S.D.
6	254	5.4	0.81	6.0	1.04
7	224	6.7	1.13	7.0	1.33
8	249	6.8	1.18	7.3	1.45
9	252	7.3	1.36	7.9	1.55
10	178	8.7	2.31	9.3	2.63
11	135	8.9	2.44	9.4	2.74
12	123	9.8	2.83	10.7	3.00

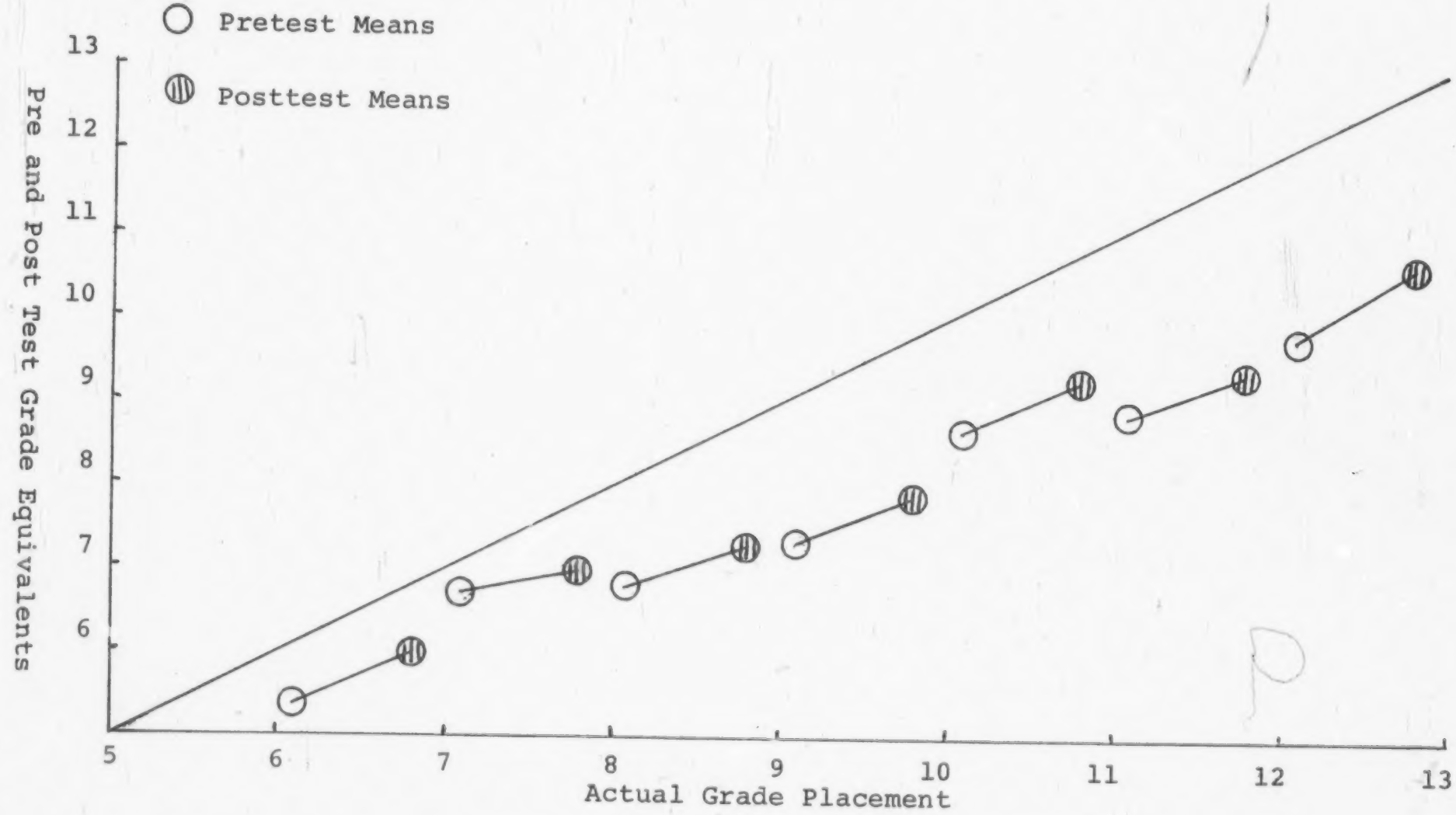


FIGURE 3: CALIFORNIA ACHIEVEMENT TEST

MATHEMATICS

Grades 6 - 12

Achievement Patterns for Each Racial Group in the School System by Grades

Tables 5, 6, and 7, present pre-test and post-test grade equivalent mean scores and standard deviations for grades six through twelve for each racial group on the reading, language, and mathematics subtests.

Figures 4, 5, and 6 present graphically the grade equivalent mean scores for the pre-test and the post-test grades six through twelve for each racial group on the reading, language, and mathematics subtests.

From tables 5, 6, and 7 and figures 4, 5, and 6 it may be seen that the achievement patterns for whites in reading and language cluster at or above the national average. White students earned scores slightly below the national norms on the mathematics subtest. The mean achievement scores for black students are about 1.5 grade equivalent scores below whites at the sixth grade level. This difference has increased to about 3.5 grade equivalent scores by the twelfth grade. Examination of the sixth grade scores of Indian students show the Indian group about 1.2 grade equivalent scores behind white students. This difference has increased to about 2.9 grade equivalent scores by the twelfth grade. The general achievement pattern between the three racial groups shows that as the grade level of the students increase, greater differences between the mean achievement scores of the races increase. Witty and Decker (1927), Garth, Lovelady, and Smith (1930), Osborne (1960), and

Stallings (1960) found a similar pattern. This pattern may be attributed to the inability of students with lower measured IQ scores to gain as much from school type experiences as do students with a higher measured IQ score. As the number of years a student is enrolled in school increases, the student with the lower measured IQ score lags farther behind the student with the higher measured IQ score in academic performance. Katzenmeyer (1962) attributes part of the IQ score lag by members of a minority race to their inability to interact socially with members of the majority race. This suggests that the degree of freedom a minority race has to interact socially with the majority race and the academic performance of a minority race are concomitants. This is demonstrated in Hoke County by the Indian group. Compared to blacks, Indians have higher mean achievement scores and have more freedom to interact socially with whites.

The mean achievement score differences between the races are greater for reading and language than it is for mathematics. This is in agreement with the finding of Witty and Decker (1927) who tested black and white children of chronological ages 7 through 13 and found that black students more closely approached the white children in mathematics than they did in language or reading. This may be attributed to academic performance in reading and language which requires a greater degree of assimilation into the majority culture than does mathematics.

TABLE 5

CALIFORNIA ACHIEVEMENT TEST, READING SUBTEST,
GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS,
AND NUMBER OF STUDENTS FOR GRADES 6 THROUGH 12,
PRE-TEST AND POST-TEST BY RACIAL GROUPS

GRADE	TIME OF TESTING	RACE OF STUDENT								
		WHITE			INDIAN			NEGRO		
		NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.
6	Pre	99	6.1	1.04	24	4.7	1.04	131	4.4	1.03
	Post	99	6.7	.99	24	5.2	1.05	131	5.0	1.13
7	Pre	87	7.7	1.56	24	5.9	1.71	113	5.4	1.32
	Post	87	8.5	1.64	24	6.6	2.06	113	6.2	1.39
8	Pre	98	8.5	1.55	24	6.3	1.41	127	5.7	1.42
	Post	98	9.3	1.70	24	6.9	1.76	127	6.4	1.52
9	Pre	113	9.1	1.71	22	6.6	1.70	117	6.2	1.50
	Post	113	9.6	1.63	22	6.8	2.03	117	6.6	1.72
10	Pre	86	10.7	1.73	14	8.7	1.61	78	7.7	1.09
	Post	86	11.2	1.75	14	9.0	1.82	78	8.3	1.42
11	Pre	63	11.1	1.93	11	8.6	1.22	61	7.8	1.13
	Post	63	11.5	2.09	11	9.1	1.80	61	8.2	1.42
12	Pre	62	12.4	1.85	8	9.1	2.26	53	8.8	1.77
	Post	62	12.7	2.06	8	10.1	1.95	53	9.3	1.76

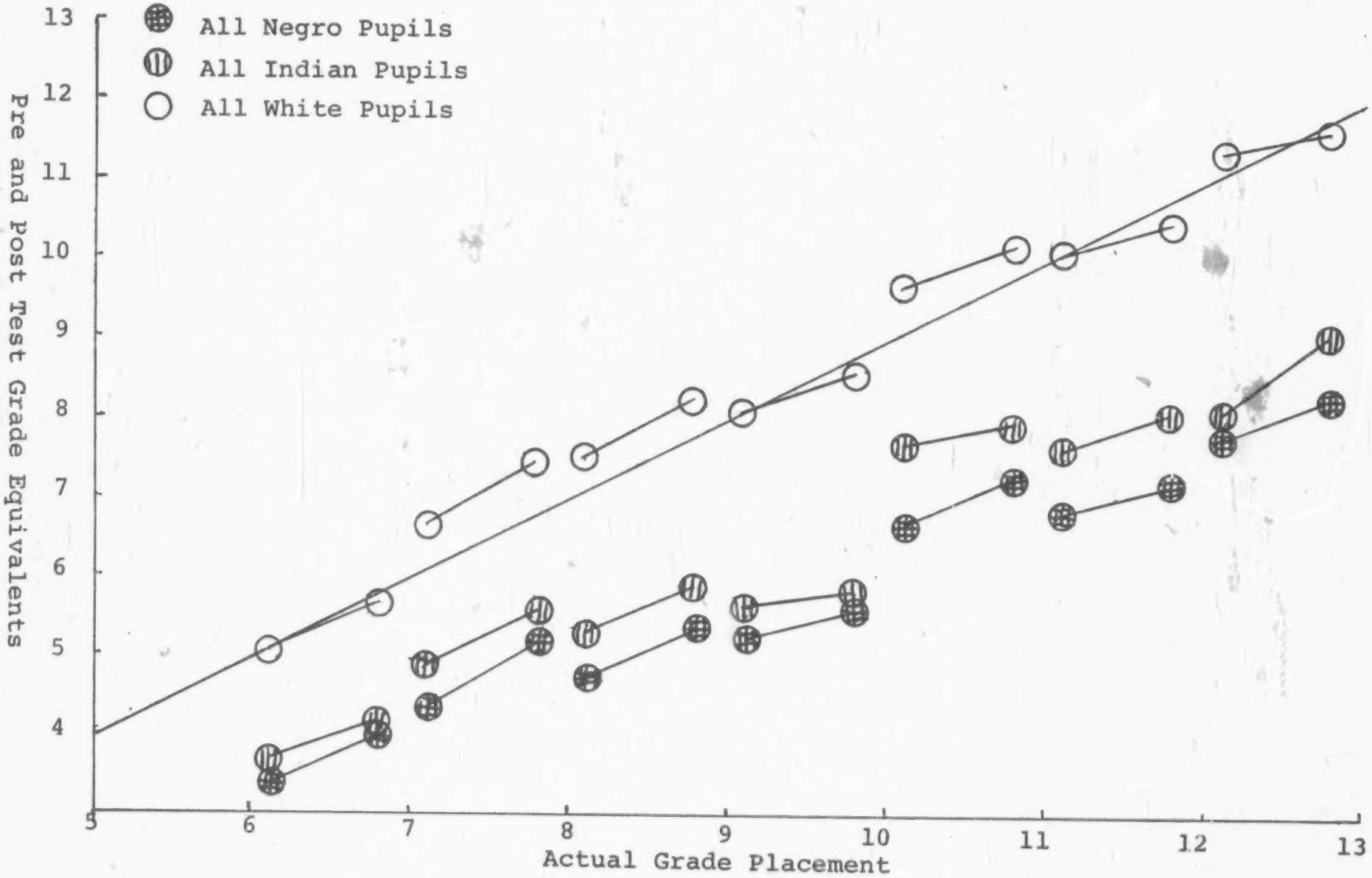


FIGURE 4: CALIFORNIA ACHIEVEMENT TEST

READING

Grades 6 - 12 (By Racial Group)

TABLE 6

CALIFORNIA ACHIEVEMENT TEST, LANGUAGE SUBTEST,
GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS,
AND NUMBER OF STUDENTS FOR GRADES 6 THROUGH 12
PRE-TEST AND POST-TEST BY RACIAL GROUPS

GRADE	TIME OF TESTING	RACE OF STUDENT								
		WHITE			INDIAN			NEGRO		
		NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.
6	Pre	99	6.3	1.03	24	5.0	1.00	131	4.5	1.05
	Post	99	6.8	1.02	24	5.3	1.25	131	5.0	1.15
7	Pre	87	8.2	1.54	24	6.3	1.65	113	5.9	1.43
	Post	87	9.0	1.73	24	7.1	2.01	113	6.8	1.57
8	Pre	98	9.0	1.54	24	6.9	1.64	127	6.3	1.57
	Post	98	9.5	1.76	24	7.3	1.87	127	6.9	1.59
9	Pre	113	9.4	1.83	22	7.0	1.65	117	6.4	1.75
	Post	113	10.1	1.72	22	7.6	1.77	117	7.2	1.83
10	Pre	86	11.1	1.70	14	8.6	1.70	78	8.1	1.74
	Post	86	11.8	1.80	14	9.3	1.73	78	8.6	2.02
11	Pre	63	11.2	2.04	11	8.9	1.82	61	7.9	1.69
	Post	63	12.1	2.09	11	9.6	1.97	61	9.1	1.92
12	Pre	62	12.6	1.87	8	9.8	2.61	53	9.8	1.72
	Post	62	13.0	1.88	8	10.0	2.35	53	10.1	1.77

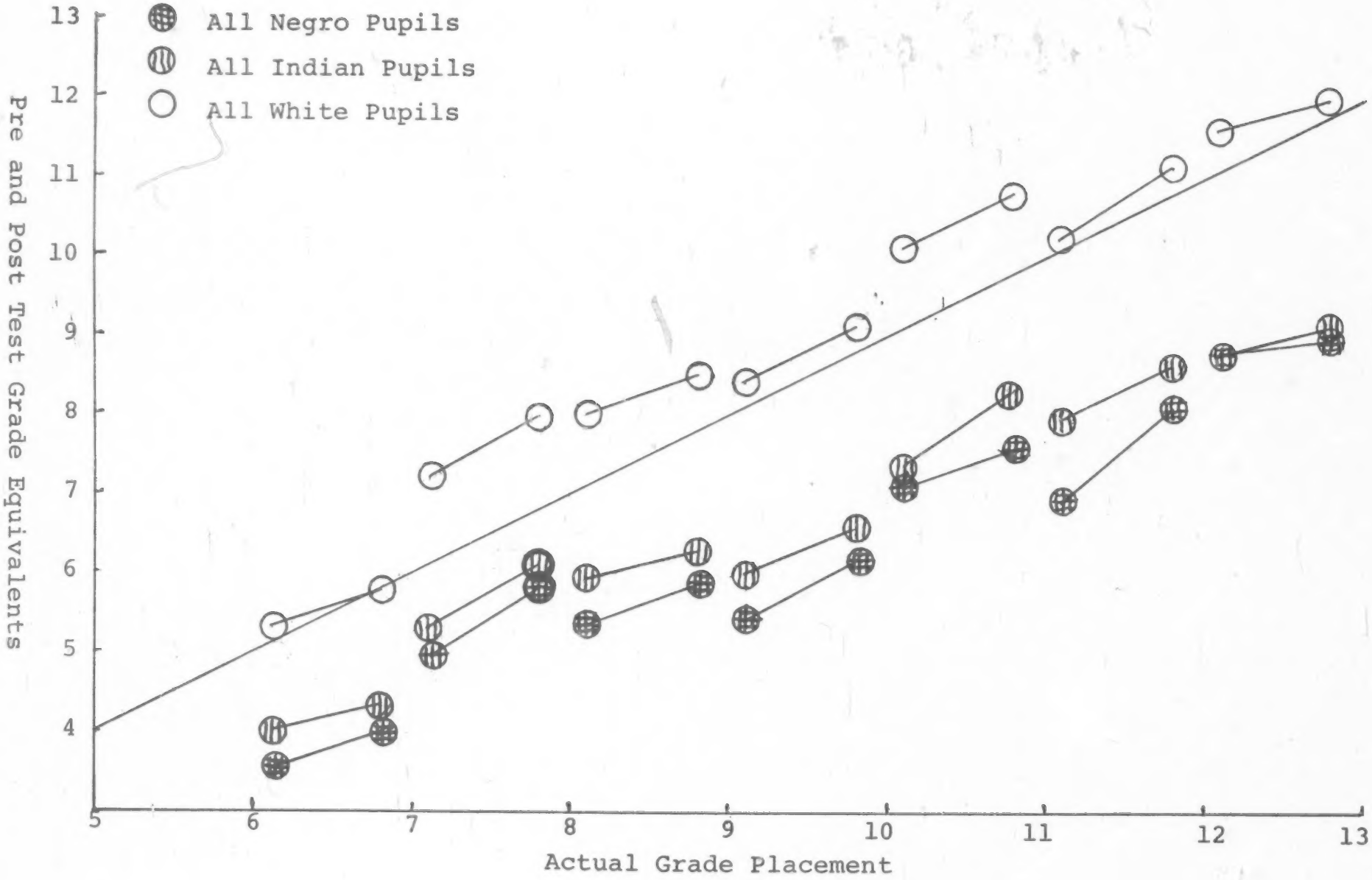


FIGURE 5: CALIFORNIA ACHIEVEMENT TEST

LANGUAGE

Grades 6 - 12 (By Racial Group)

TABLE 7

CALIFORNIA ACHIEVEMENT TEST, MATHEMATICS SUBTEST,
GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS, AND
NUMBER OF STUDENTS FOR GRADES 6 THROUGH 12,
PRE-TEST AND POST-TEST BY RACIAL GROUPS

GRADE	TIME OF TESTING	RACE OF STUDENT								
		WHITE			INDIAN			NEGRO		
		NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.
6	Pre	99	6.1	0.61	24	5.3	0.80	131	5.0	0.78
	Post	99	6.7	0.78	24	5.7	1.01	131	5.6	0.92
7	Pre	87	7.4	1.00	24	6.3	1.35	113	6.2	0.81
	Post	87	7.9	1.25	24	6.6	1.56	113	6.5	0.99
8	Pre	98	7.6	1.05	24	6.3	1.09	127	6.3	0.94
	Post	98	8.2	1.46	24	6.7	1.27	127	6.7	1.05
9	Pre	113	8.2	1.34	22	6.8	0.87	117	6.6	0.94
	Post	113	8.8	1.44	22	7.3	1.20	117	7.1	1.21
10	Pre	86	10.2	2.11	14	7.5	1.34	78	7.3	1.55
	Post	86	11.0	2.20	14	8.1	1.83	78	7.8	2.08
11	Pre	63	10.5	2.18	11	8.8	2.13	61	7.3	1.47
	Post	63	11.2	2.39	11	9.1	2.28	61	7.7	1.91
12	Pre	62	11.8	2.22	8	9.3	1.98	53	7.7	1.78
	Post	62	12.7	2.27	8	9.7	2.44	53	8.5	2.06

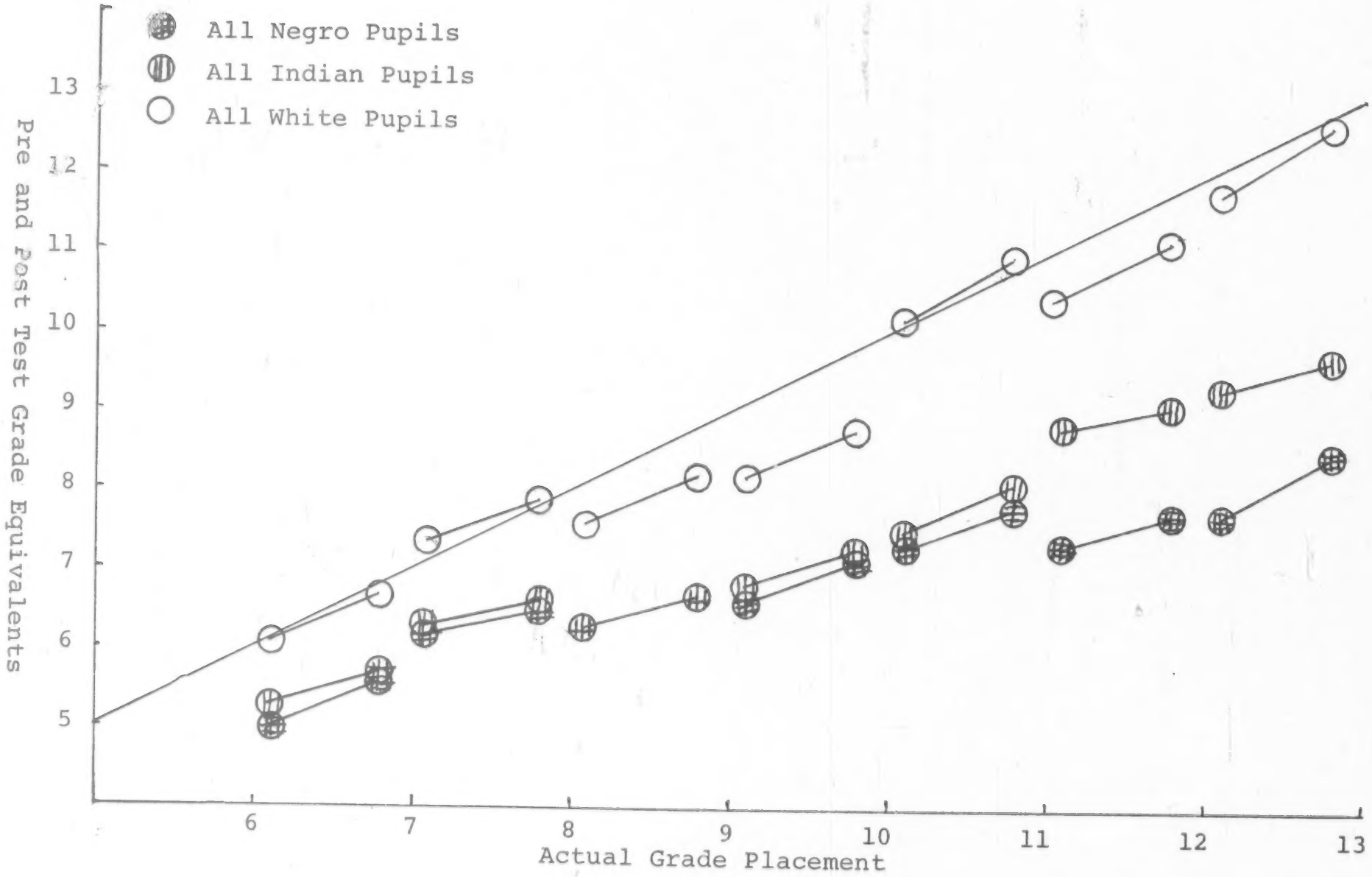


FIGURE 6: CALIFORNIA ACHIEVEMENT TEST

MATHEMATICS

Grades 6 - 12 (By Racial Group)

Comparison of the Achievement Patterns of Each Race of Student by Sex

Tables 8, 9, and 10 present the post-test grade equivalent mean scores and standard deviations for grades six through twelve for each racial group by sex on the reading, language, and mathematics subtests.

Figures 7, 8, and 9 show graphically the mean post-test grade equivalent scores for grades six through twelve for each racial group by sex on the reading, language, and mathematics subtests.

Tables 8, 9, and 10 and Figures 7, 8, and 9 reveal that girls have higher mean grade equivalent scores than boys on each subtest until near the end of high school. Toward the end of the high school experiences, the achievement differences between sexes on the reading and mathematics subtest diminish and male achievement is higher than female achievement. On the language subtest girls have a higher mean grade equivalent score than boys throughout high school, but at grade twelve the differences between the sexes are diminishing. The same pattern exists for both black and white students.

Baughman and Dahlstrom (1968) found that girls utilize opportunities in the classroom much more effectively than boys, in grades one through eight. The performance of the younger white boys was found to be comparably strong, but beyond age 11 they dropped below the performance of white girls. The

black boys performed consistently below black girls even at the younger age levels. Baughman and Dahlstrom explain this drop in the performance of the younger white boys in stating that "it is about this age that boys become more resistant to school, less conforming, and less willing to apply themselves" (page 81).

Pierce (1961) studied "Sex Differences in Achievement Motivation" and concluded that "achievement motivation in girls is related to motivation to reach adulthood early, rather than to motivation to achieve academically. For boys it is related to college-going and academic achievement" (page 48). These conclusions lead the writer to believe also that girls perform better academically than boys around age 11 because they have a stronger desire to reach adulthood. Toward the end of the high school experiences both sexes are reaching adulthood and boys begin performing better academically because of their opportunities in employment and education.

TABLE 8

CALIFORNIA ACHIEVEMENT TEST, READING SUBTEST,
GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS,
AND NUMBERS OF STUDENTS, GRADE 6 THROUGH 12, BY SEX
(INDIANS OMITTED BECAUSE OF SMALL NUMBERS)

GRADE	WHITE						NEGRO					
	MALE			FEMALE			MALE			FEMALE		
	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.
6	38	6.6	.99	59	6.9	0.97	63	4.8	1.19	67	5.1	1.06
7	44	8.3	1.64	43	8.7	1.62	52	6.1	1.45	61	6.3	1.35
8	55	9.2	1.70	43	9.4	1.72	50	6.2	1.78	76	6.6	1.31
9	55	9.3	1.76	58	9.9	1.44	58	6.4	1.71	57	6.9	1.66
10	43	11.1	1.83	43	11.4	1.67	41	7.8	1.24	37	8.8	1.41
11	30	11.4	2.31	33	11.6	1.90	30	8.2	1.65	31	8.3	1.18
12	31	12.7	2.20	31	12.6	1.95	22	9.8	2.22	31	8.9	1.26

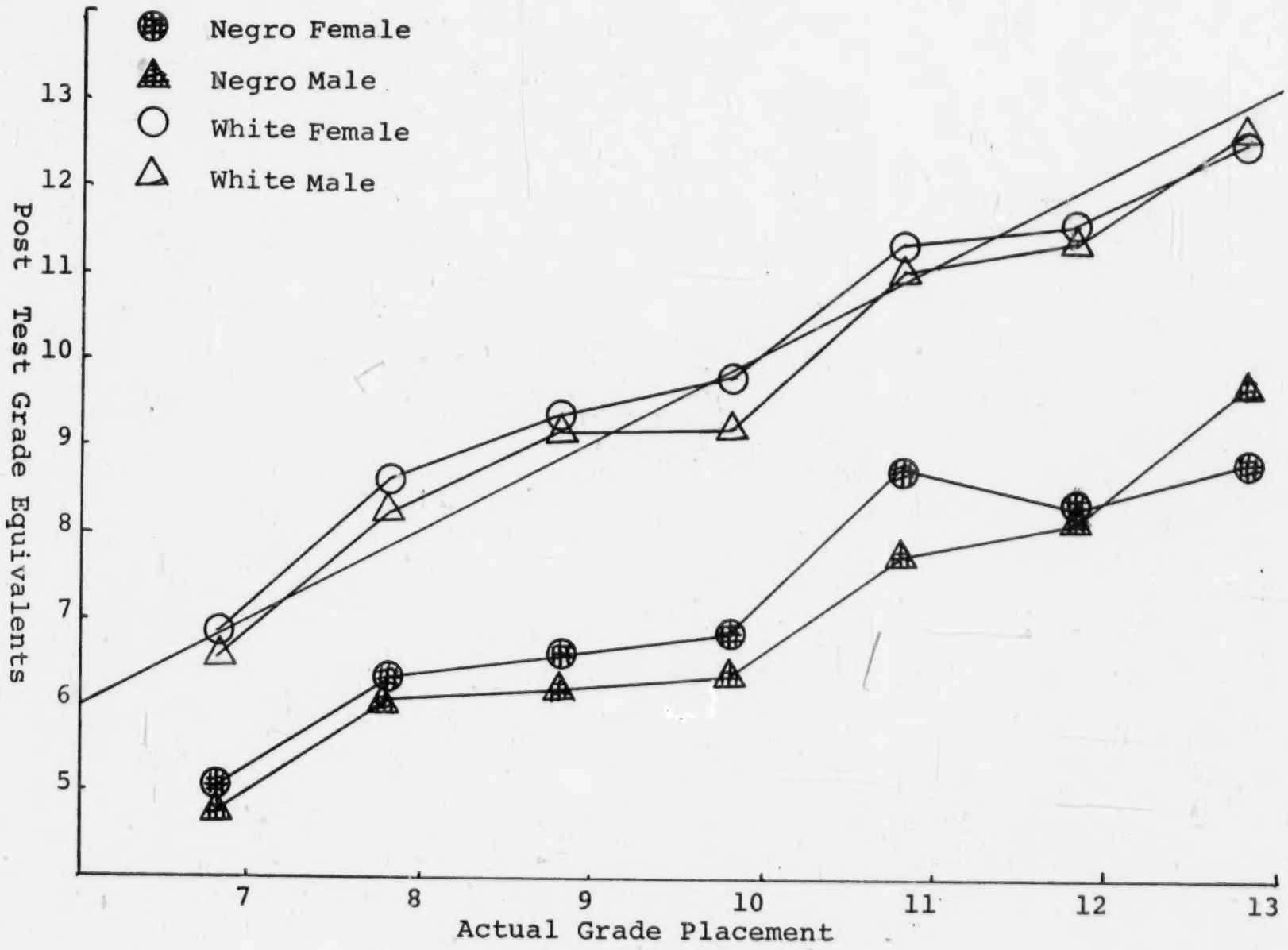


FIGURE 7: CALIFORNIA ACHIEVEMENT TEST

READING

Grades 6 - 12 (By Sex and Racial Group)

TABLE 9

CALIFORNIA ACHIEVEMENT TEST, LANGUAGE SUBTEST,
GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS,
AND NUMBERS OF STUDENTS, GRADE 6 THROUGH 12, BY SEX
(INDIANS OMITTED BECAUSE OF SMALL NUMBERS)

GRADE	WHITE						NEGRO					
	MALE			FEMALE			MALE			FEMALE		
	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.
6	38	6.5	.90	59	7.1	.99	63	4.7	1.02	67	5.3	1.21
7	44	8.4	1.65	43	9.6	1.62	52	6.4	1.47	61	7.2	1.56
8	55	9.0	1.62	43	10.2	1.71	50	6.3	1.64	76	7.3	1.43
9	55	9.4	1.79	58	10.7	1.39	58	6.9	1.82	57	7.6	1.84
10	46	11.4	1.84	43	12.1	1.79	41	7.6	1.57	37	9.7	1.95
11	30	11.5	2.42	33	12.7	1.58	30	8.6	1.92	31	9.6	1.82
12	31	12.6	2.22	31	13.4	1.38	22	10.0	1.99	31	10.2	1.63

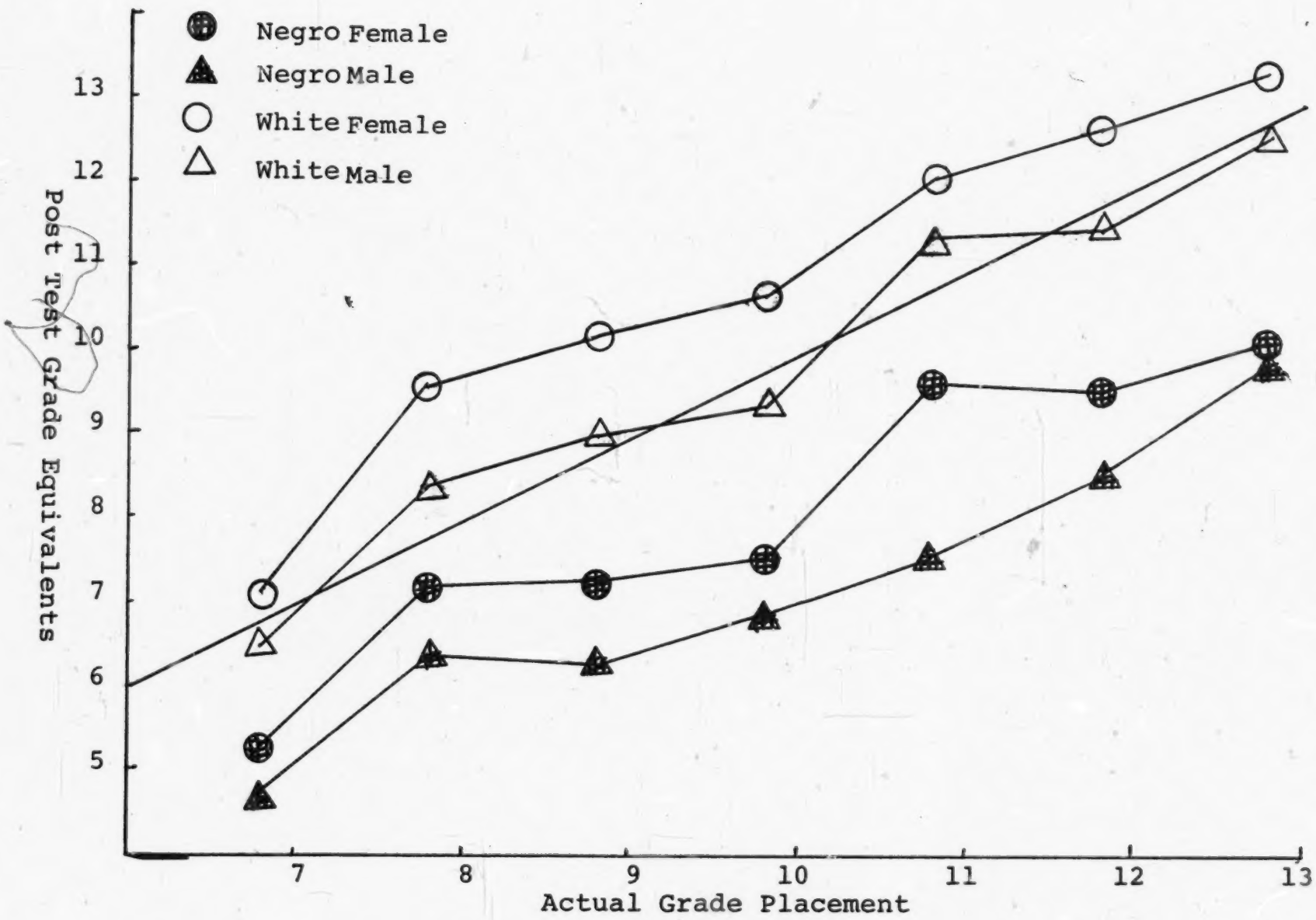


FIGURE 8: CALIFORNIA ACHIEVEMENT TEST

LANGUAGE

Grades 6 - 12 (By sex and racial group)

TABLE 10

CALIFORNIA ACHIEVEMENT TEST, MATHEMATICS SUBTEST, GRADE EVUIVALENT MEANS, STANDARD DEVIATIONS, AND NUMBERS OF STUDENTS, GRADE 6 THROUGH 12, BY SEX (INDIANS OMITTED BECAUSE OF SMALL NUMBERS)

GRADE	WHITE						NEGRO					
	MALE			FEMALE			MALE			FEMALE		
	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.	NUMBER	MEAN	S.D.
6	38	6.6	.83	59	6.8	.71	63	5.5	.91	67	5.6	.93
7	44	7.7	1.26	43	8.0	1.23	52	6.3	.86	61	6.7	1.08
8	55	8.1	1.41	43	8.4	1.53	50	6.7	1.25	76	6.6	.88
9	55	8.8	1.47	58	8.8	1.41	58	7.3	1.34	57	7.0	1.05
10	43	10.6	2.26	43	11.3	2.12	41	7.3	1.82	37	8.3	2.24
11	30	11.1	2.70	33	11.3	2.11	30	7.9	2.28	31	7.4	1.46
12	31	12.9	2.46	31	12.5	2.07	22	9.5	2.52	31	7.7	1.25

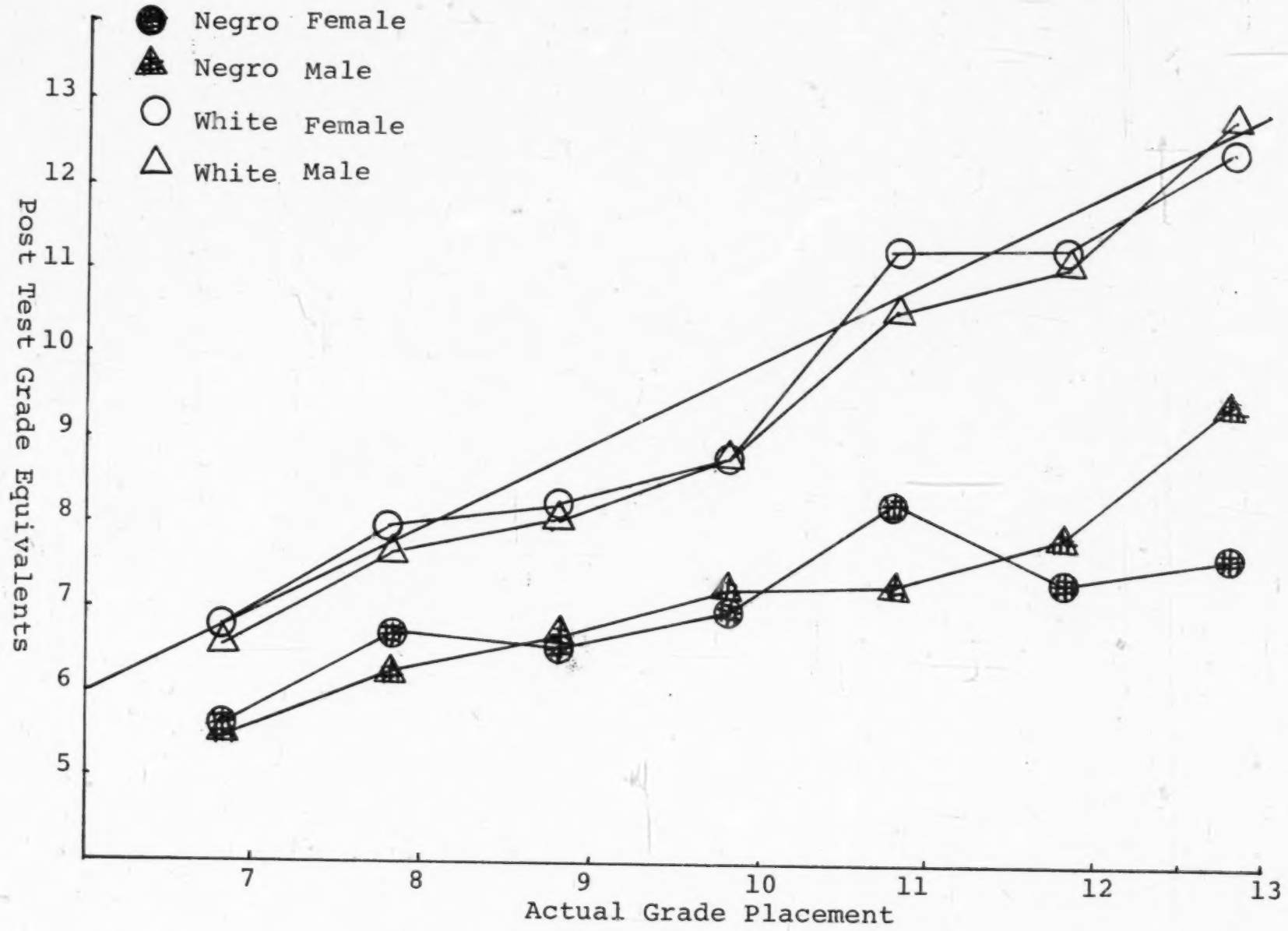


FIGURE 9: CALIFORNIA ACHIEVEMENT TEST

MATHEMATICS

Grades 6 - 12 (By sex and racial group)

Comparison of the Achievement Patterns of Each Race for Students Who Have Been Retained in at Least One Grade With Students Who Have Never Been Retained

Tables 11, 12, and 13 present pre-test and post-test grade equivalent mean scores and standard deviations for grades six through twelve on the reading, language, and mathematics subtests. These data are presented separately for each racial group, for students who were retained in at least one grade since entering school and students who have not be retained.

Figures 10, 11, and 12 show graphically the mean grade equivalent scores for the pre-test and the post-test grades six through twelve on the reading, language, and mathematics subtests. These graphs are presented separately for each racial group of students who were retained in at least one grade since entering school and students who have not been retained.

An examination of tables 11, 12, and 13 and figures 10, 11, and 12 reveals that students who have been retained have a lower mean achievement score than students who have not been retained. The difference is greater for grade twelve than for grade six, and the negative effect of grade retention is greater for whites than for blacks.

Generally students are retained in a grade because they did not perform up to teacher expectations. Either the child did not have the ability, using the mode of learning presented

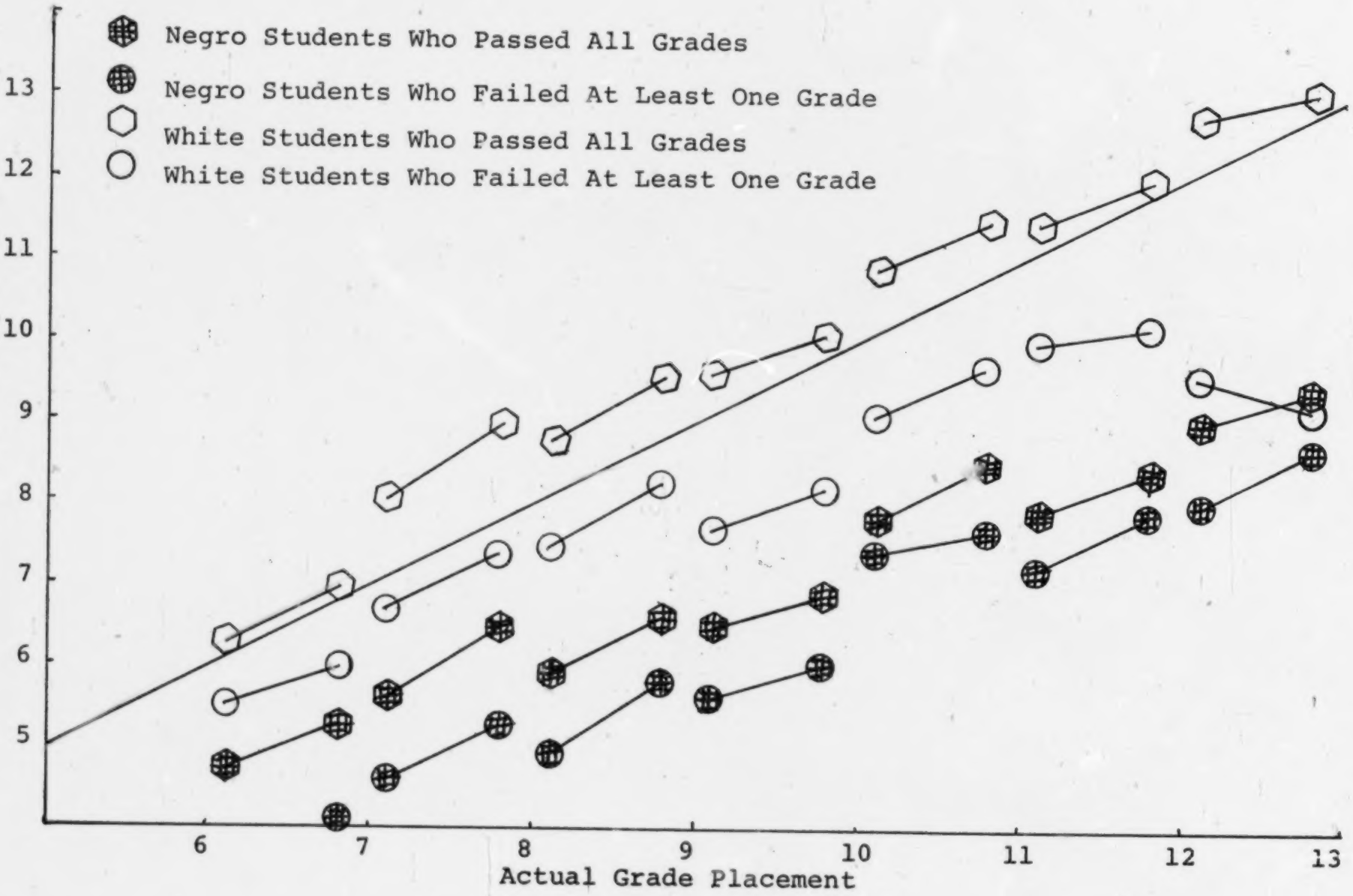
by the teacher, or some other reason detained his performance. In either case it is the belief of the writer that grade retention in the elementary and junior high school hinders the academic performance of a greater number of students than it helps. In a Burlington, North Carolina study (SPECS, 1969), using grades one through six, low ability students performed better academically in a non-graded classroom than they performed in a more structured graded classroom. In the same study the non-graded program had no negative effects on the performance of average to above average students. Low ability students appear to perform better academically if they are allowed the freedom to interact with their own age group. Therefore, a wide range of grade equivalent scores within the same classroom does not necessarily hinder the individual student's progress.

In this study the negative effect of grade retention is greater for whites than for blacks. This may be attributed to a theory that the majority of students learn and retain new concepts better if they have experienced success in learning similar concepts. When students have experienced repeated failure in attempts to learn similar concepts, they become withdrawn and do not perform at their best. They are failures. The successful black student in Hoke County is a failure when compared to his white counterpart. He has been denied the freedom to assimilate into the white culture, and to him, school is white culture. This writer is of the opinion that students who are members of a minority race are forced to behave as if they were failures.

TABLE 11

CALIFORNIA ACHIEVEMENT TEST, READING SUBTEST, GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS, AND NUMBERS OF STUDENTS, GRADE 6 THROUGH 12, PRE-TEST AND POST-TEST SCORES, FOR STUDENTS WHO PASSED ALL GRADES AND STUDENTS WHO FAILED AT LEAST ONE GRADE (INDIANS OMITTED BECAUSE OF SMALL NUMBERS)

		WHITE					NEGRO				
	GRADE		PRE-TEST		POST-TEST			PRE-TEST		POST-TEST	
GRADE	STATUS	NUMBER	MEAN	S.D.	MEAN	S.D.	NUMBER	MEAN	S.D.	MEAN	S.D.
6	Passed	74	6.3	1.00	7.0	.87	95	4.7	.98	5.3	1.03
	Failed	25	5.5	.93	6.0	1.27	36	3.7	.77	4.1	.90
7	Passed	62	8.1	1.53	9.0	1.56	87	5.6	1.31	6.5	1.39
	Failed	25	6.7	1.18	7.4	1.25	26	4.6	1.13	5.3	1.00
8	Passed	75	8.8	1.50	9.6	1.53	101	5.9	1.42	6.6	1.58
	Failed	23	7.5	1.31	8.3	1.90	26	4.9	1.12	5.8	1.10
9	Passed	83	9.6	1.32	10.1	1.34	78	6.5	1.50	6.9	1.63
	Failed	30	7.7	1.92	8.2	1.55	39	5.6	1.33	6.0	1.75
10	Passed	73	10.9	1.66	11.5	1.69	55	7.8	1.19	8.5	1.53
	Failed	13	9.1	1.17	9.7	1.14	23	7.4	.74	7.7	.92
11	Passed	47	11.5	1.95	12.0	2.05	46	7.9	1.o0	8.4	1.17
	Failed	16	10.0	1.42	10.2	1.63	15	7.2	1.07	7.9	2.00
12	Passed	55	12.8	1.56	13.1	1.60	41	9.0	1.81	9.4	1.79
	Failed	7	9.6	1.61	9.2	2.17	12	8.0	1.44	8.7	1.60



READING

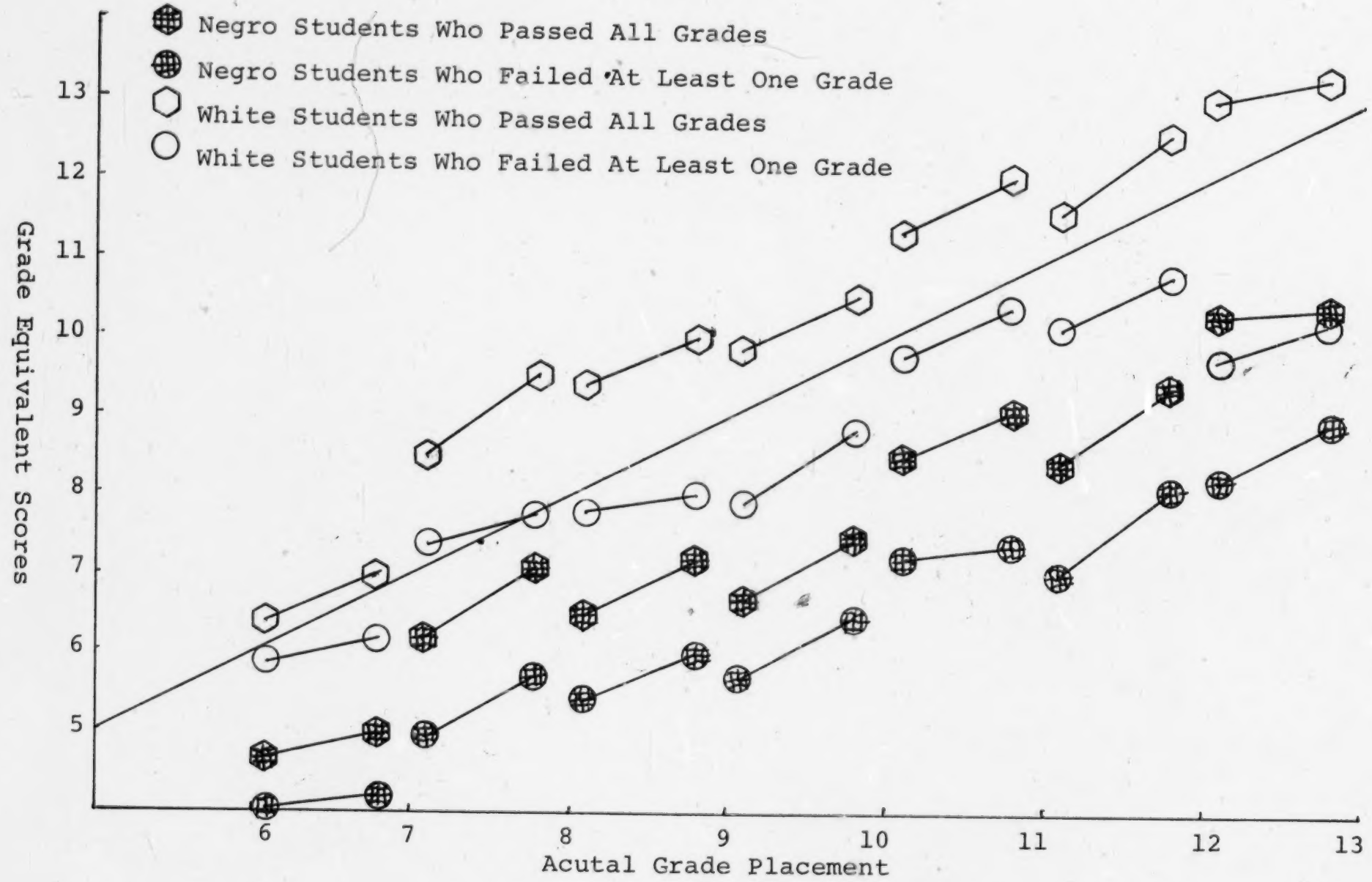
FIGURE 10: CALIFORNIA ACHIEVEMENT TEST

Grades 6 - 12 (By Racial Group)

TABLE 12

CALIFORNIA ACHIEVEMENT TEST, LANGUAGE SUBTEST, GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS, AND NUMBERS OF STUDENTS, GRADE 6 THROUGH 12, PRE-TEST AND POST-TEST SCORES, FOR STUDENTS WHO PASSED ALL GRADES AND STUDENTS WHO FAILED AT LEAST ONE GRADE (INDIANS OMITTED BECAUSE OF SMALL NUMBERS)

		WHITE					NEGRO				
			PRE-TEST		POST-TEST			PRE-TEST		POST-TEST	
GRADE	GRADE STATUS	NUMBER	MEAN	S.D.	MEAN	S.D.	NUMBER	MEAN	S.D.	MEAN	S.D.
6	Passed	74	6.4	1.04	7.0	.93	95	4.7	1.05	5.3	1.10
	Failed	25	5.9	.89	6.2	1.03	36	3.9	.79	4.2	.83
7	Passed	62	8.5	1.49	9.5	1.66	87	6.2	1.30	7.1	1.49
	Failed	25	7.4	1.42	7.8	1.27	26	4.9	1.39	5.7	1.31
8	Passed	75	9.4	1.42	10.0	1.57	101	6.5	1.55	7.2	1.55
	Failed	23	7.8	1.34	8.0	1.47	26	5.4	1.32	6.0	1.40
9	Passed	83	9.9	1.68	10.5	1.53	78	6.7	1.78	7.5	1.74
	Failed	30	7.9	1.49	8.8	1.59	39	5.7	1.52	6.5	1.85
10	Passed	73	11.3	1.54	12.0	1.72	55	8.5	1.78	9.1	2.08
	Failed	13	9.8	2.05	10.4	1.69	23	7.2	1.22	7.4	1.27
11	Passed	47	11.6	2.03	12.6	1.97	46	8.2	1.77	9.4	1.81
	Failed	16	10.1	1.62	10.8	1.93	15	7.0	.95	8.1	1.93
12	Passed	55	13.0	1.51	13.3	1.53	41	10.3	1.51	10.4	1.73
	Failed	7	9.7	2.04	10.2	2.09	12	8.2	1.43	8.9	1.44



LANGUAGE

FIGURE: 11 CALIFORNIA ACHIEVEMENT TEST

Grade 6 - 12 (By racial group)

TABLE 13

CALIFORNIA ACHIEVEMENT TEST, MATHEMATICS SUBTEST, GRADE EQUIVALENT MEANS, STANDARD DEVIATIONS, AND NUMBERS OF STUDENTS, GRADE 6 THROUGH 12, PRE-TEST AND POST-TEST SCORES, FOR STUDENTS WHO PASSED ALL GRADES AND STUDENTS WHO FAILED AT LEAST ONE GRADE (INDIANS OMITTED BECAUSE OF SMALL NUMBERS)

		WHITE					NEGRO				
			PRE-TEST		POST-TEST			PRE-TEST		POST-TEST	
GRADE	GRADE STATUS	NUMBER	MEAN	S.D.	MEAN	S.D.	NUMBER	MEAN	S.D.	MEAN	S.D.
6	Passed	74	6.1	.61	6.8	.76	95	5.2	.78	5.8	.87
	Failed	25	5.9	.57	6.4	.76	36	4.5	.52	4.9	.76
7	Passed	62	7.7	.99	8.2	1.06	87	6.3	.80	6.7	1.01
	Failed	25	6.7	.56	7.1	.81	26	5.7	.65	5.9	.65
8	Passed	75	7.8	.98	8.4	1.43	101	6.4	.97	6.8	1.06
	Failed	23	7.0	1.05	7.4	1.31	26	5.8	.60	6.0	.65
9	Passed	83	8.4	1.24	9.0	1.41	78	6.7	.98	7.2	1.22
	Failed	30	7.6	1.48	8.2	1.38	39	6.3	.80	6.8	1.13
10	Passed	73	10.4	2.09	11.2	2.15	55	7.6	1.67	8.2	2.22
	Failed	13	8.8	1.69	9.5	1.97	23	6.7	1.00	6.8	1.32
11	Passed	47	11.0	2.22	11.7	2.35	46	7.4	1.52	7.7	1.72
	Failed	16	9.2	1.48	9.7	1.90	15	7.1	1.33	7.7	2.47
12	Passed	55	12.1	1.98	13.1	1.79	41	8.0	1.89	8.7	2.17
	Failed	7	9.4	2.70	9.4	3.07	12	6.7	.84	7.5	1.31

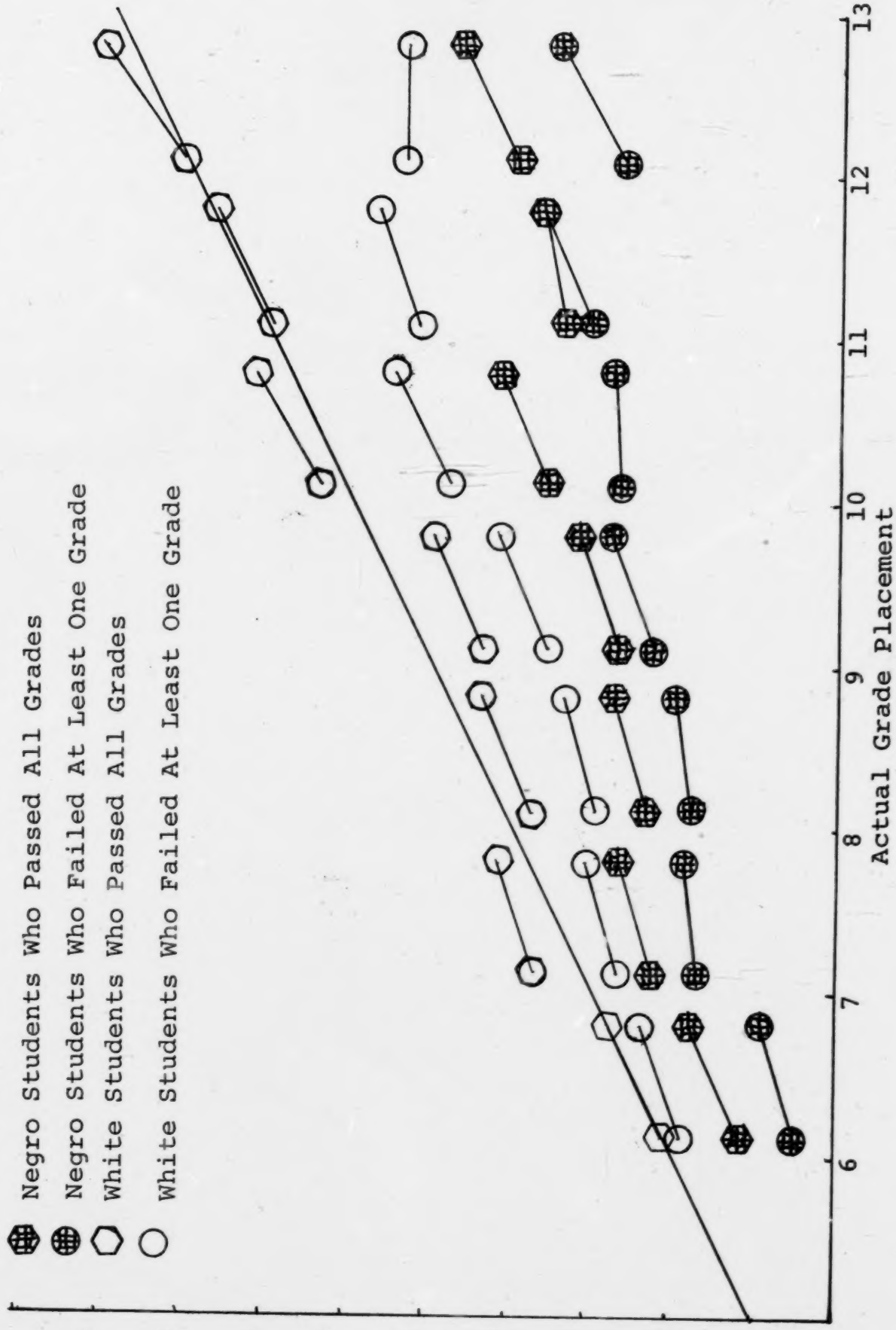


FIGURE 12: CALIFORNIA ACHIEVEMENT TEST

Grades 6 - 12 (By racial group)

Comparison of the Achievement Patterns for Each Race in the School System Before and After Integration

In order to determine the effect of integration of classes upon the student's achievement, a regression line relating grade placement to grade equivalent scores was obtained for each subtest and the total battery for each racial group before and after integration. Comparisons were then made between slopes and altitudes of these lines pre and post integration.

Table 14 presents the mean grade equivalent scores, standard deviations, and actual grade placement on the reading, language, and mathematics subtests and the total battery for each racial group pre and post integration test scores.

Table 15 presents the slope of the regression lines on the reading, language, and mathematics subtests and the total battery for each racial group's pre and post integration test scores.

Figures 13, 14, 15, and 16 show the predicted grade equivalent mean scores, grades six through twelve for the reading, language, and mathematics subtests and the total battery for each racial group, before and after integration.

Twelve statistical hypotheses were tested regarding the slopes of the pre and post integration lines within racial groups. No statistically significant differences were found between slopes in any racial group or for any test. Since there were no differences in the slopes twelve further tests were performed comparing altitudes. It was found that black

students had a significantly higher mean achievement test score after integration on the mathematics subtest and the total battery. The level of significance was .05. Indian students performed equally well on all tests before and after integration White students performed equally well on all tests before and after integration.

TABLE 14

THE MEAN GRADE EQUIVALENT, STANDARD DEVIATION, ACTUAL GRADE PLACEMENT, ALL GRADES COMBINED FOR THE READING, LANGUAGE, AND MATHEMATICS SUBTEST AND THE TOTAL BATTERY OF THE CALIFORNIA ACHIEVEMENT TEST, ALL RACES, PRE-TEST AND POST-TEST

TESTS	WHITE				INDIAN				NEGRO			
	PRE-TEST		POST-TEST		PRE-TEST		POST-TEST		PRE-TEST		POST-TEST	
	MEAN	S. D.	MEAN	S. D.	MEAN	S. D.	MEAN	S. D.	MEAN	S. D.	MEAN	S. D.
READING	9.12	2.50	9.72	2.53	6.65	2.09	7.18	2.27	6.19	1.88	6.79	1.94
LANGUAGE	9.45	2.51	10.10	2.55	7.04	2.12	7.58	2.28	6.57	2.16	7.26	2.22
MATHEMATICS	8.58	2.34	9.23	2.52	6.77	1.70	7.19	1.90	6.44	1.39	6.90	1.65
BATTERY	9.05	2.36	9.68	2.42	6.82	1.87	7.32	2.06	6.40	1.70	6.98	1.81
ACTUAL GRADE PLACEMENT	8.82		9.52		8.44		9.14		8.54		9.23	

TABLE 15

SLOPE OF THE REGRESSION LINE SCORES, ALL GRADES COMBINED FOR THE READING, LANGUAGE, AND MATHEMATICS SUBTEST AND THE TOTAL BATTERY OF THE CALIFORNIA ACHIEVEMENT TEST ALL RACES, PRE-TEST AND POST-TEST

TESTS	WHITE		INDIAN		NEGRO	
	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST
	SLOPE	SLOPE	SLOPE	SLOPE	SLOPE	SLOPE
READING	1.01	.93	.78	.76	.70	.66
LANGUAGE	.98	.98	.75	.77	.77	.77
MATHEMATICS	.92	.97	.62	.63	.43	.43
BATTERY	.97	.96	.72	.72	.63	.62

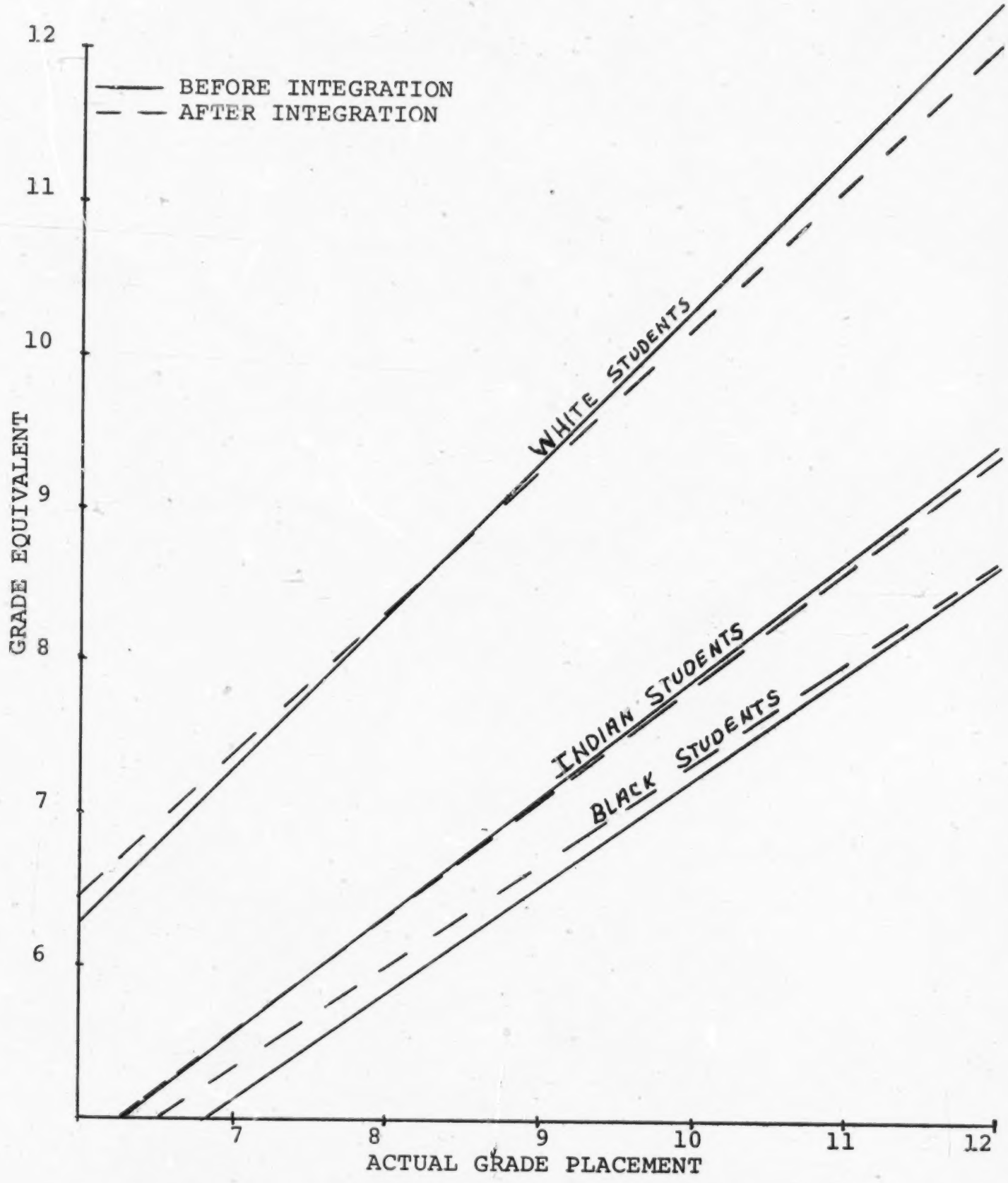


FIGURE 13:CALIFORNIA ACHIEVEMENT TEST, READING SUBTEST, ACHIEVEMENT PATTERNS BEFORE AND AFTER INTEGRATION, FOR EACH RACIAL GROUP

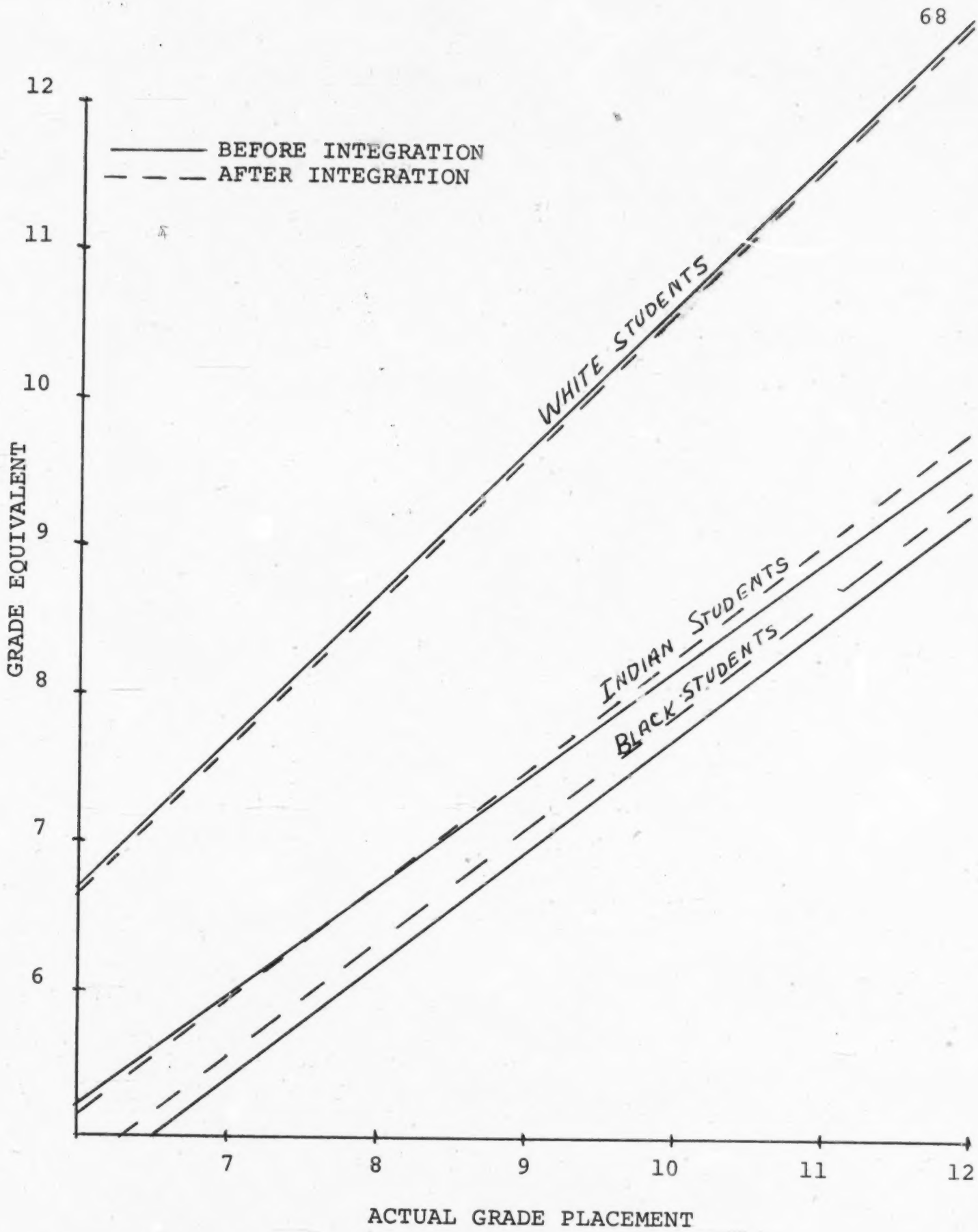


FIGURE 14:CALIFORNIA ACHIEVEMENT TEST, LANGUAGE SUBTEST, ACHIEVEMENT PATTERNS BEFORE AND AFTER INTEGRATION, FOR EACH RACIAL GROUP

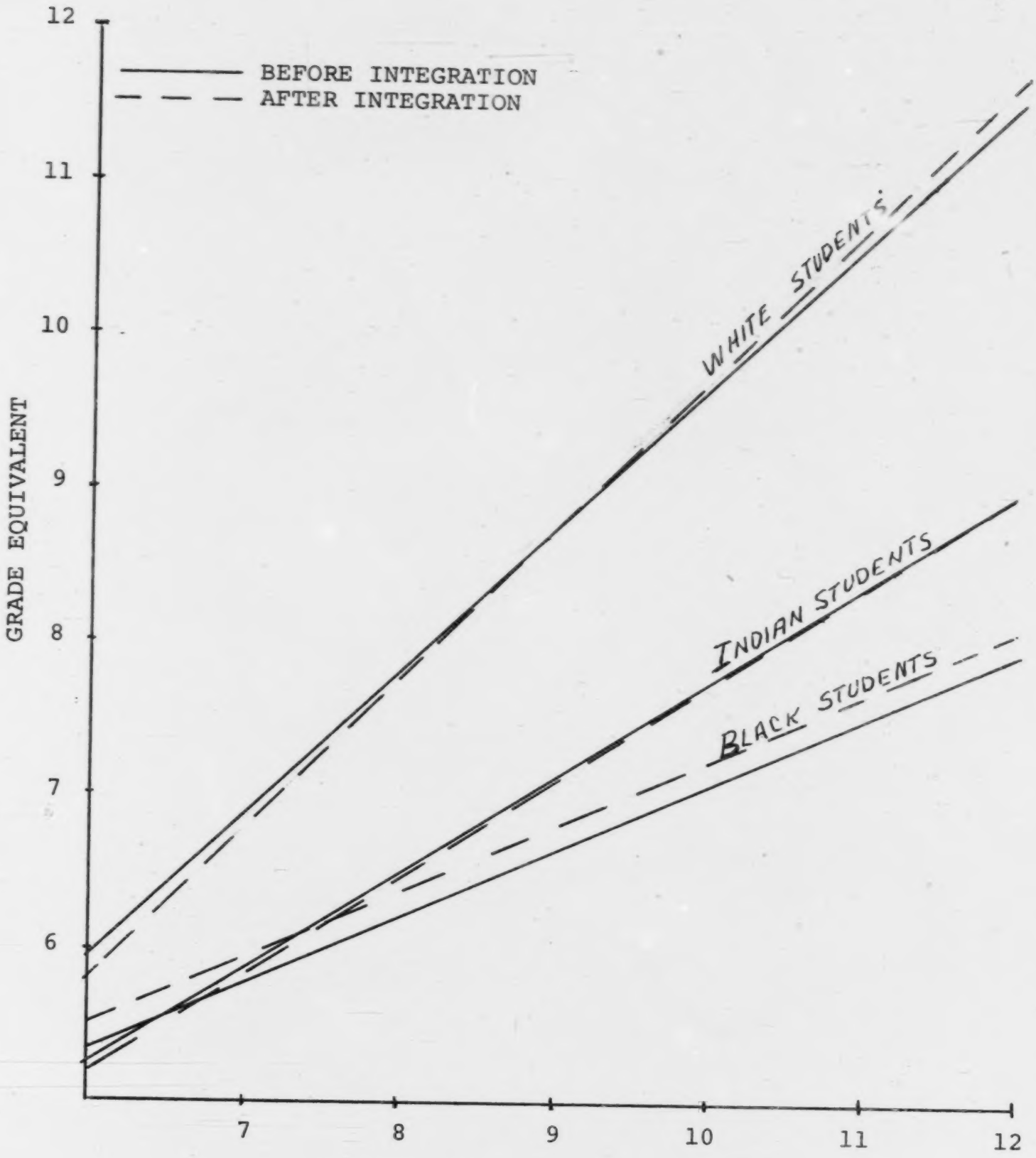


FIGURE 15:CALIFORNIA ACHIEVEMENT TEST, MATHEMATICS SUBTEST, ACHIEVEMENT PATTERNS BEFORE AND AFTER INTEGRATION, FOR EACH RACIAL GROUP

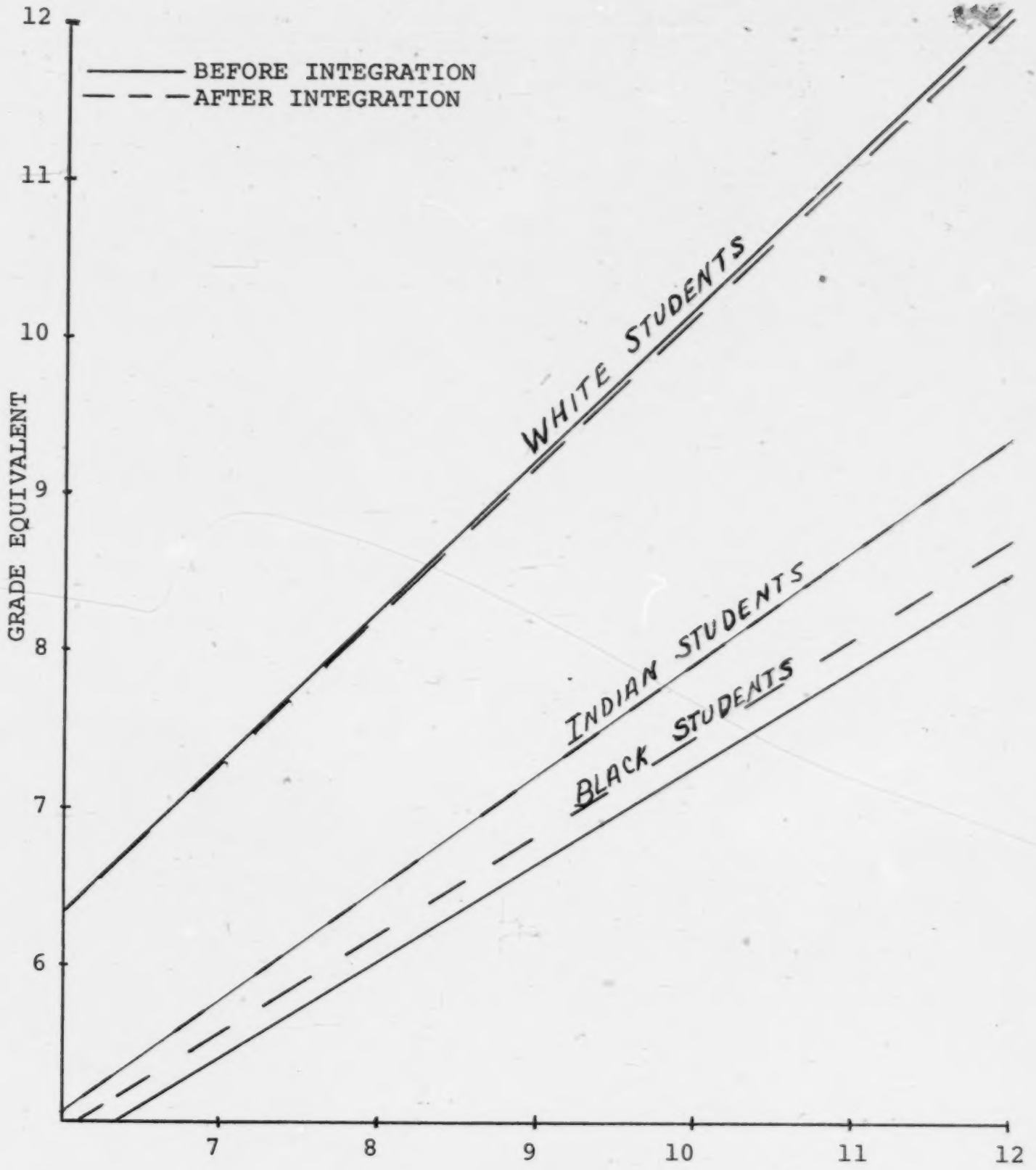


FIGURE 16:CALIFORNIA ACHIEVEMENT TEST, TOTAL BATTERY, ACHIEVEMENT PATTERNS BEFORE AND AFTER INTEGRATION, FOR EACH RACIAL GROUP

A Comparison of Student Achievement, Teacher Effectiveness, and Student-Teacher Interaction.

To compare achievement of the three racial groups across grade levels, grade equivalent scores were converted to standard scores for all races combined grade by grade. The mean score for each grade was fifty with a standard deviation of ten. Students were divided into nine groups according to the students' race and the race of his teacher for each student-teacher racial pairing.

The following questions are pertinent:

(1) Were there any differences in mean achievement test scores of student racial groups?

(2) Were there any differences in mean achievement test scores of students taught by each racial group of teachers?

(3) Was there any interaction between the race of the student and the race of his teacher which affected the students' mean achievement test scores?

Table 16 presents the achievement mean score (standardized), standard deviations, and the number of students for each student-teacher racial pairing on the California Test of Mental Maturity and the reading subtest of the California Achievement Test.

Figure 17 shows graphically the students' mean standardized post-test scores for the reading subtest by the race

of the student and the race of his English teacher.

An examination of Table 16 and Figure 17 reveals that the mean reading achievement score for whites is higher than the mean reading achievement score for black or Indian students. White students in sections taught by white English teachers had higher mean California Test of Mental Maturity scores than the white students in sections taught by a black or Indian English teacher. Indian students placed into sections taught by Indian English teachers had higher mean C.T.M.M. scores than did Indian students placed into sections taught by a black or white English teacher. Black students in sections taught by white, Indian, or black English teachers had about the same mean score on the California Test of Mental Maturity.

Because of the variation between the different groups' mean C.T.M.M. and reading pre-test scores the pre-test reading and C.T.M.M. scores were used as covariables in adjusting the group's post-test reading scores. A Computer Program For Analysis of Data By General Linear Models by C. Frank Starmer and James E. Grizzle (1968) was used to analyze the data to test the hypotheses.

TABLE 16

MEANS, STANDARD DEVIATIONS, AND NUMBERS OF STUDENTS FOR EACH STUDENT-TEACHER RACIAL PARING, C.A.T. READING SUB-TLST (STANDARD SCORLS MEAN=50, S.D.=10), AND C.T.M.M. SCORLS

RACIAL GROUP STUDENT/TEACHER	NUMBER OF STUDENTS	C.T.M.M.	S.D.	POST-TEST	S.D.
WHITE/WHITE	424	106.5	15.5	58.2	7.9
WHITE/INDIAN	24	99.6	18.1	56.4	7.8
WHITE/NEGRO	160	99.2	15.4	55.2	7.5
INDIAN/WHITE	65	83.0	16.4	47.1	8.8
INDIAN/INDIAN	12	88.7	19.0	49.4	6.6
INDIAN/NEGRO	50	80.5	17.1	45.4	8.2
NEGRO/WHITE	388	78.9	15.4	44.9	7.4
NEGRO/INDIAN	29	79.3	13.8	45.7	6.8
NEGRO/NEGRO	263	77.1	14.3	43.8	7.0

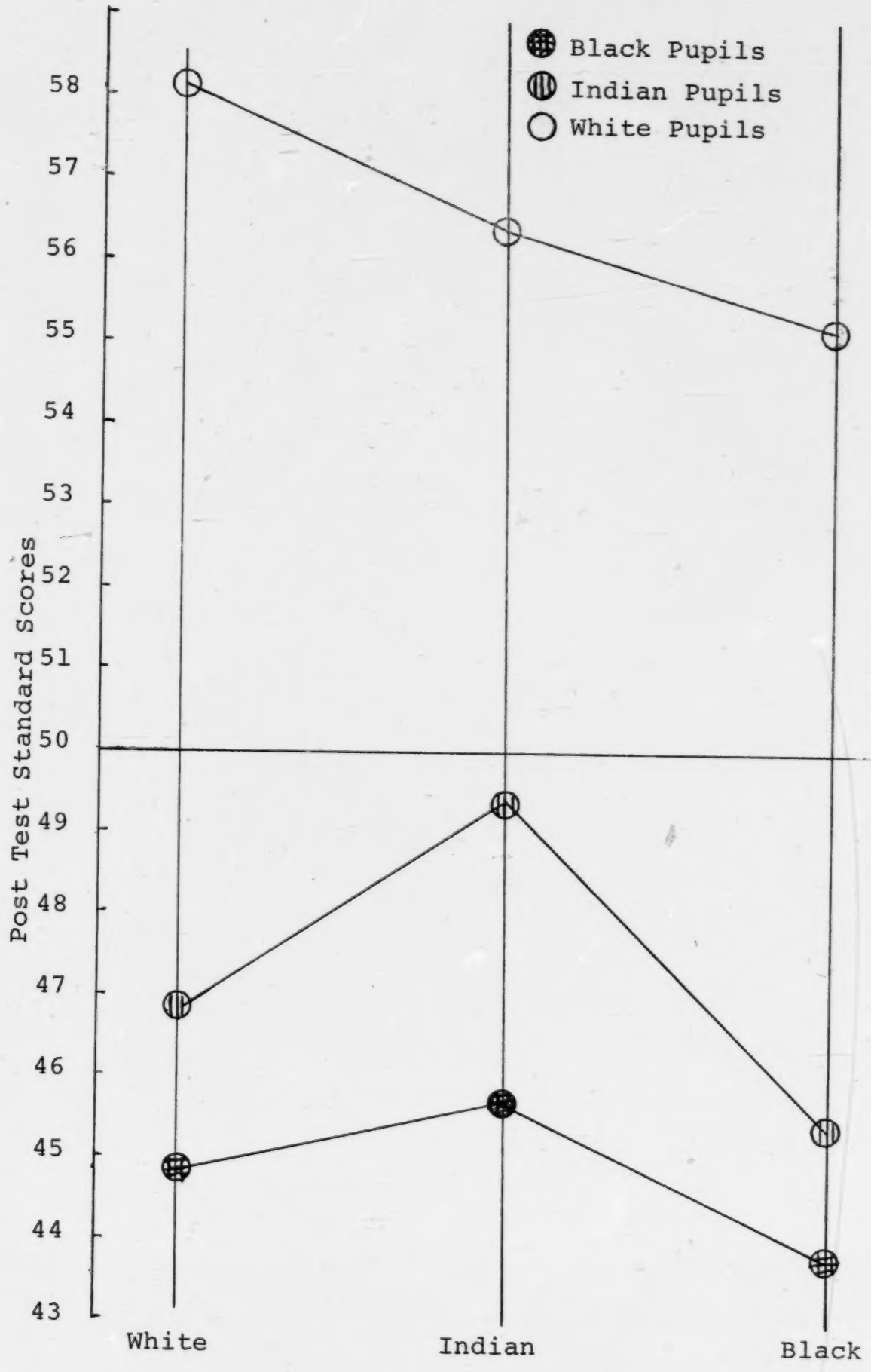


FIGURE 17: CALIFORNIA ACHIEVEMENT TEST
READING
(By Racial Group of Student and Teacher)

Table 17 presents the mean scores and standard deviations of the California Achievement Test, reading subtest, and standardized post-test scores. The mean post-test score has been adjusted for the overall mean reading pre-test score and the overall California Test of Mental Maturity score.

Figure 18 shows graphically the mean standardized post-test scores for the California Achievement Test, reading subtest by the race of the student and the race of his English teacher. The post-test score has been adjusted for the mean pre-test and C.T.M.M. score.

When each student's post-test score was asjusted for the overall mean reading pre-test and C.T.M.M. scores, it was found:

(1) There were no significant differences in the three racial groups of students' mean adjusted reading scores. In other words children of the same ability level and the same pre-test score performed equally well regardless of the racial group.

(2) The reading score of the student was independent of the race of his English teacher.

(3) The reading score of the student was not affected by an interaction between the race of the student and the race of his English teacher.

TABLE 17

MEANS, AND STANDARD DEVIATIONS OF STANDARDIZED POST-TEST SCORES, ADJUSTED FOR PRE-TEST AND C.T.M.M. SCORES, C.A.T. READING SUBTEST FOR EACH STUDENT-TEACHER RACIAL PAIRING

RACIAL GROUP STUDENT/TEACHER	ADJUSTED SCORE	S.D.
WHITE/WHITE	49.7	2.7
WHITE/INDIAN	52.0	9.9
WHITE/NEGRO	50.7	3.5
INDIAN/WHITE	50.0	5.0
INDIAN/INDIAN	49.6	10.7
INDIAN/NEGRO	49.7	6.0
NEGRO/WHITE	49.4	2.3
NEGRO/INDIAN	50.7	9.6
NEGRO/NEGRO	50.2	3.3

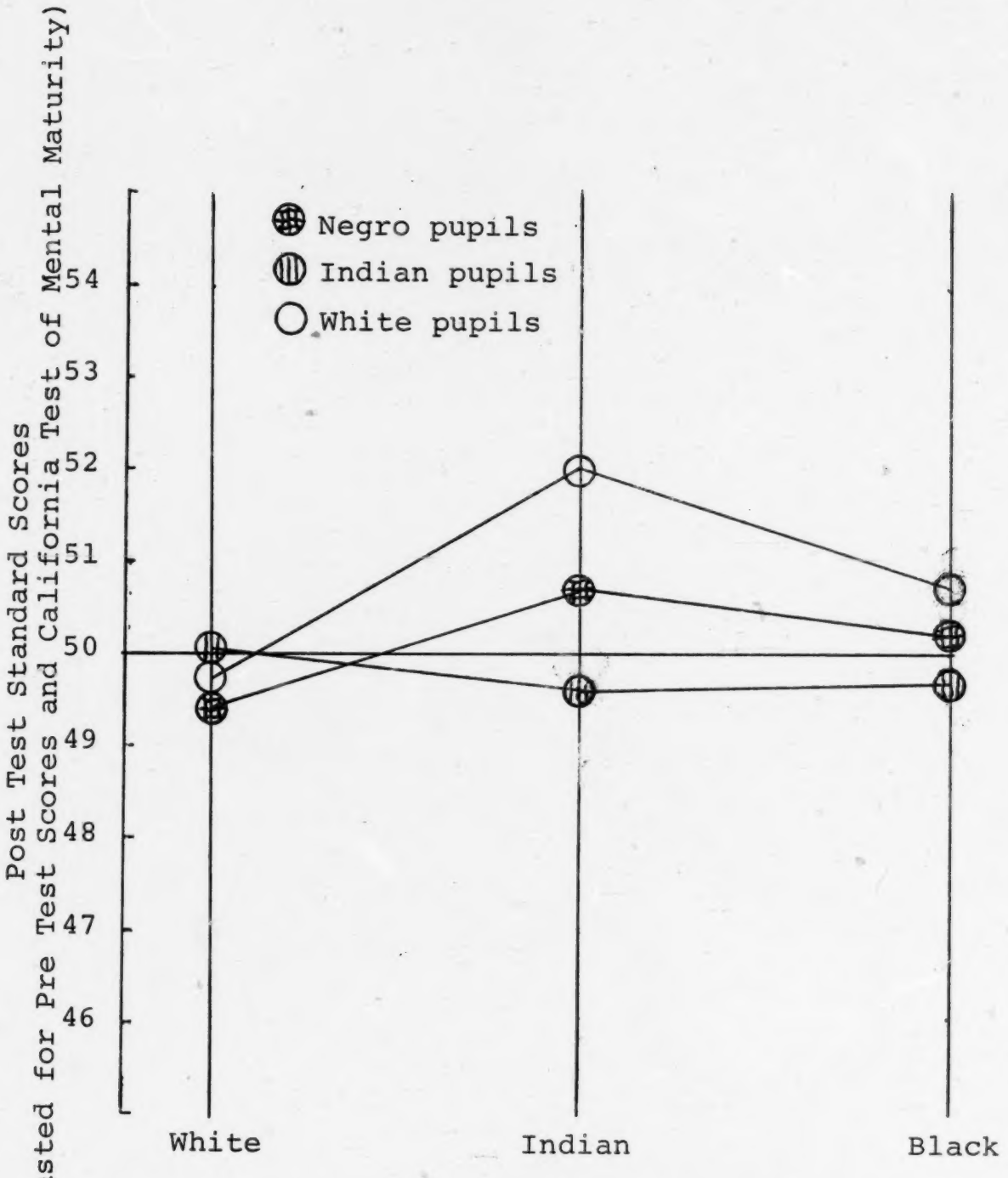


FIGURE 18: CALIFORNIA ACHIEVEMENT TEST
READING
(By Racial Group of Student and Teacher)

Table 18 presents the mean post-test standardized scores, standard deviations, and the number of students for each student-teacher racial pairing on the C.T.M.M. and the C.A.T., language subtest.

Figure 19 shows graphically the students' mean standardized post-test score for the language subtest by the race of the student and the race of his English teacher.

An examination of Table 18 and Figure 19 reveals that the mean language achievement score for white students is higher than the mean language achievement score for black or Indian students. White students placed into sections taught by white English teachers had a higher mean C.T.M.M. score than white students who were placed in sections taught by black or Indian English teachers. Indian students placed in sections taught by Indian English teachers had a higher mean C.T.M.M. score than did Indian students placed into sections taught by black or white English teachers. Black students placed in sections taught by white, Indian, or black English teachers had about the same C.T.M.M. mean score.

As in reading the variation between the different groups mean C.T.M.M. and language pre-test scores influenced the writer to believe that pre-test language and C.T.M.M. scores should be used as covariables in adjusting the groups' post-test language scores.

TABLE 18

MEANS, STANDARD DEVIATIONS, AND NUMBERS OF STUDENTS FOR EACH STUDENT-TEACHER RACIAL PARING, C.A.T. LANGUAGE SUB-TEST (STANDARD SCORES MEAN=50, S.D.=10), AND C.T.M.M. SCORES

RACIAL GROUP STUDENT/TEACHER	NUMBER OF STUDENTS	C.T.M.M.	S.D.	POST-TEST	S.D.
WHITE/WHITE	424	106.5	15.5	57.7	7.7
WHITE/INDIAN	24	99.6	18.1	56.4	8.9
WHITE/NEGRO	160	99.2	15.4	54.9	7.6
INDIAN/WHITE	65	83.0	16.4	47.0	9.5
INDIAN/INDIAN	12	88.7	19.0	47.3	7.5
INDIAN/NEGRO	50	80.5	17.1	46.3	7.2
NEGRO/WHITE	388	78.9	15.4	45.5	7.8
NEGRO/INDIAN	29	79.3	13.8	47.2	8.3
NEGRO/NEGRO	263	77.1	14.3	43.6	7.6

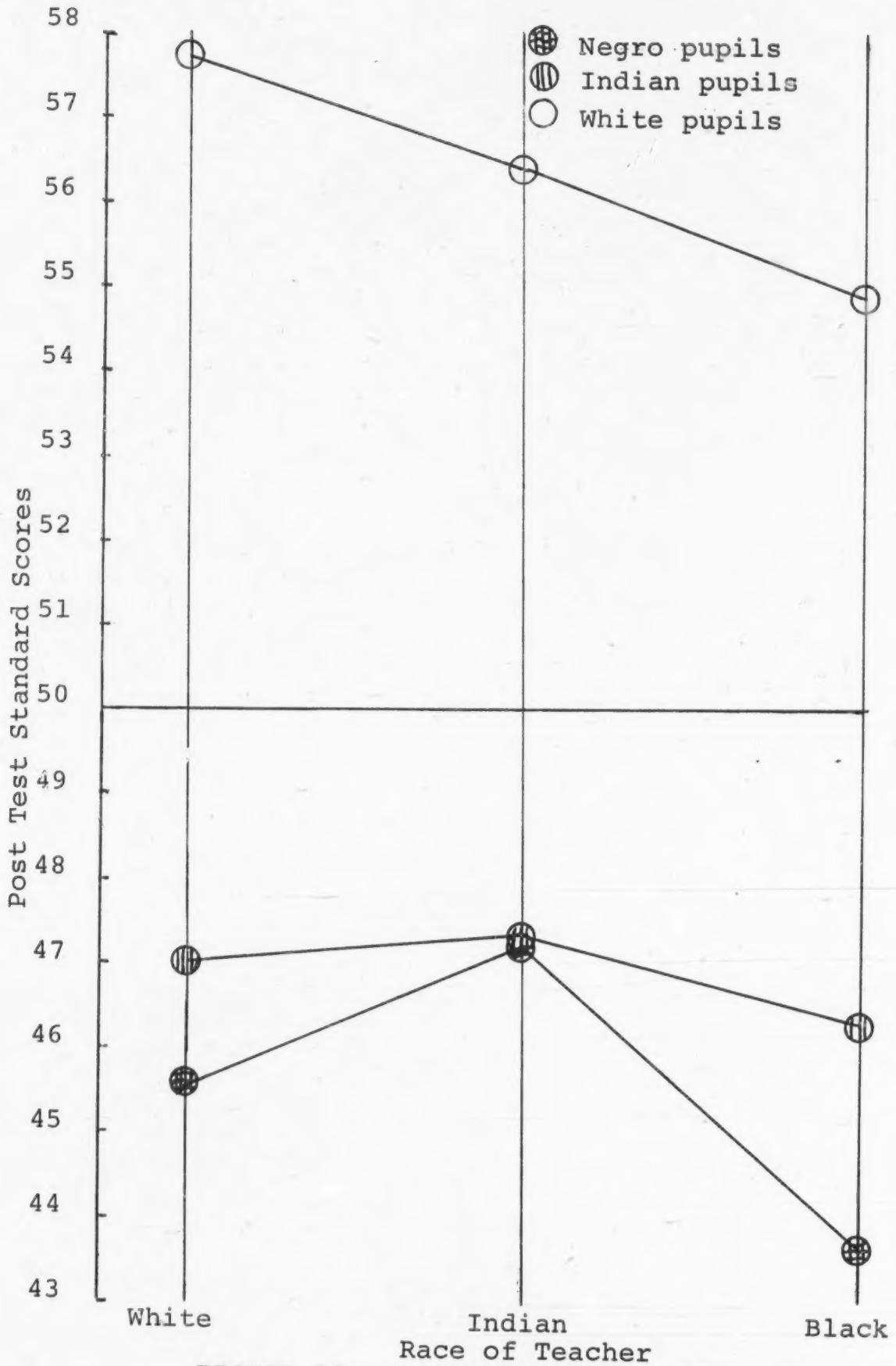


FIGURE 19: CALIFORNIA ACHIEVEMENT TEST
LANGUAGE
(By Racial Group of Student and Teacher)

Table 19 shows the mean post-test scores and standard deviations of the California Achievement Test, language subtest, standardized. The mean post-test score has been adjusted for the overall mean language pre-test and C.T.M.M. scores.

Figure 20 presents graphically the mean standardized post-test scores for the California Achievement Test language subtest by the race of the student and the race of his English teacher. The post-test scores have been adjusted for the mean pre-test and the C.T.M.M. scores.

When each student's post-test language score was adjusted for the overall mean language pre-test and C.T.M.M. scores, it was found that:

(1) Unlike the reading achievement score black students had a significantly higher language score. The level of significance was 0.01.

(2) As in reading the language scores of the students were independent of the race of their English teacher.

(3) Black students had a higher mean language score if taught by an Indian English teacher. Indian students had a lower mean language score if taught by an Indian English teacher. This interaction is shown more clearly in figure 20 and it was significant at the 0.03 level.

TABLE 19

MEANS, AND STANDARD DEVIATIONS OF STANDARDIZED POST-TEST SCORES, ADJUSTED FOR PRE-TEST AND C.T.M.M. SCORES, C.A.T. LANGUAGE SUBTEST FOR EACH STUDENT-TEACHER RACIAL PARING

RACIAL GROUP STUDENT/TEACHER	ADJUSTED SCORE	S.D.
WHITE/WHITE	49.9	2.9
WHITE/INDIAN	49.3	11.4
WHITE/NEGRO	49.7	3.8
INDIAN/WHITE	50.2	5.4
INDIAN/INDIAN	48.4	11.4
INDIAN/NEGRO	49.1	6.6
NEGRO/WHITE	49.8	2.5
NEGRO/INDIAN	52.6	9.5
NEGRO/NEGRO	49.9	3.4

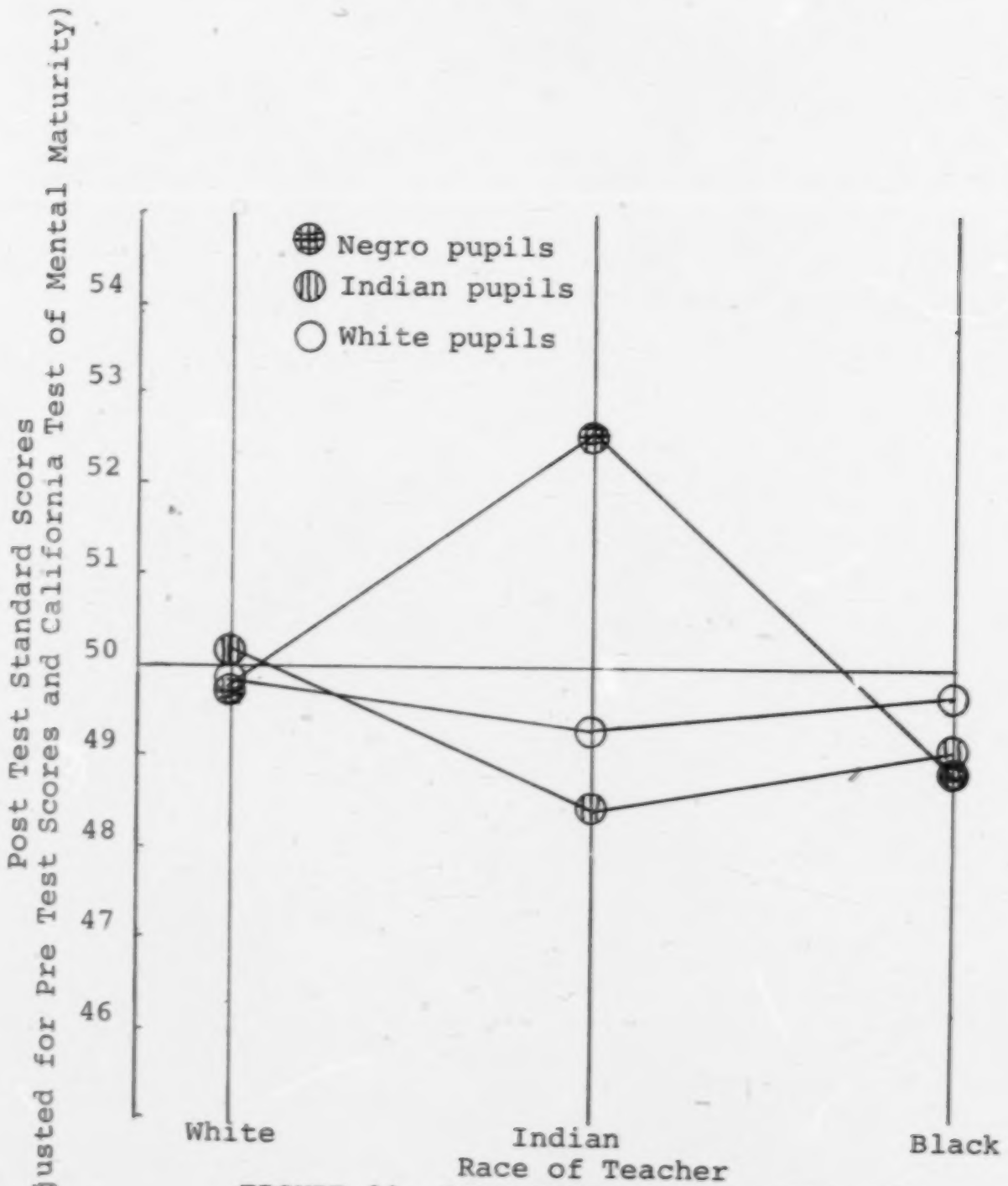


FIGURE 20: CALIFORNIA ACHIEVEMENT TEST
LANGUAGE
(By Racial Group of Student and Teacher)

Table 20 shows the mean post-test standard scores, standard deviations, and the number of students for each student-teacher racial pairing on the C.T.M.M. and the C.A.T. mathematics subtest.

Figure 21 presents graphically the students mean standardized post-test scores for the mathematics subtest by the race of the student and the race of his mathematics teacher.

An examination of Table 20 and Figure 21 reveals that mean mathematics achievement score for white students is higher than the mean mathematics achievement for black or Indian students. White students placed in sections taught by white mathematics teachers had a higher mean C.T.M.M. score than white students who were in sections taught by black or Indian mathematics teachers. Indian students placed in sections taught by white, Indian or black mathematics teachers had about the same C.T.M.M. mean score. Black students in sections taught by white, Indian, or black mathematics teachers had about the same C.T.M.M. mean score.

As in reading and language the variation between the different groups' mean C.T.M.M. and mathematics pre-test scores the writer used the pre-test mathematics and C.T.M.M. scores as covariables in adjusting the groups' post-test mathematics scores.

TABLE 20

MEANS, STANDARD DEVIATIONS, AND NUMBERS OF STUDENTS FOR EACH STUDENT-TEACHER RACIAL PARING, C.A.T. MATHEMATICS SUBTEST (STANDARD SCORES MEAN =50, S.D.=10),AND C.T.M.M. SCORES

RACIAL GROUP STUDENT/TEACHER	NUMBER OF STUDENTS	C.T.M.M.	S.D.	POST-TEST	S.D.
WHITE/WHITE	405	105.2	16.2	56.8	8.6
WHITE/INDIAN	25	101.3	16.3	54.2	10.4
WHITE/NEGRO	178	102.5	15.1	56.2	9.0
INDIAN/WHITE	61	82.9	15.1	49.9	8.0
INDIAN/INDIAN	12	80.1	19.1	48.7	5.3
INDIAN/NEGRO	54	82.5	15.9	47.6	10.7
NEGRO/WHITE	414	77.6	14.7	45.0	7.2
NEGRO/INDIAN	26	80.3	17.3	48.6	9.3
NEGRO/NEGRO	240	79.1	15.1	45.9	8.3

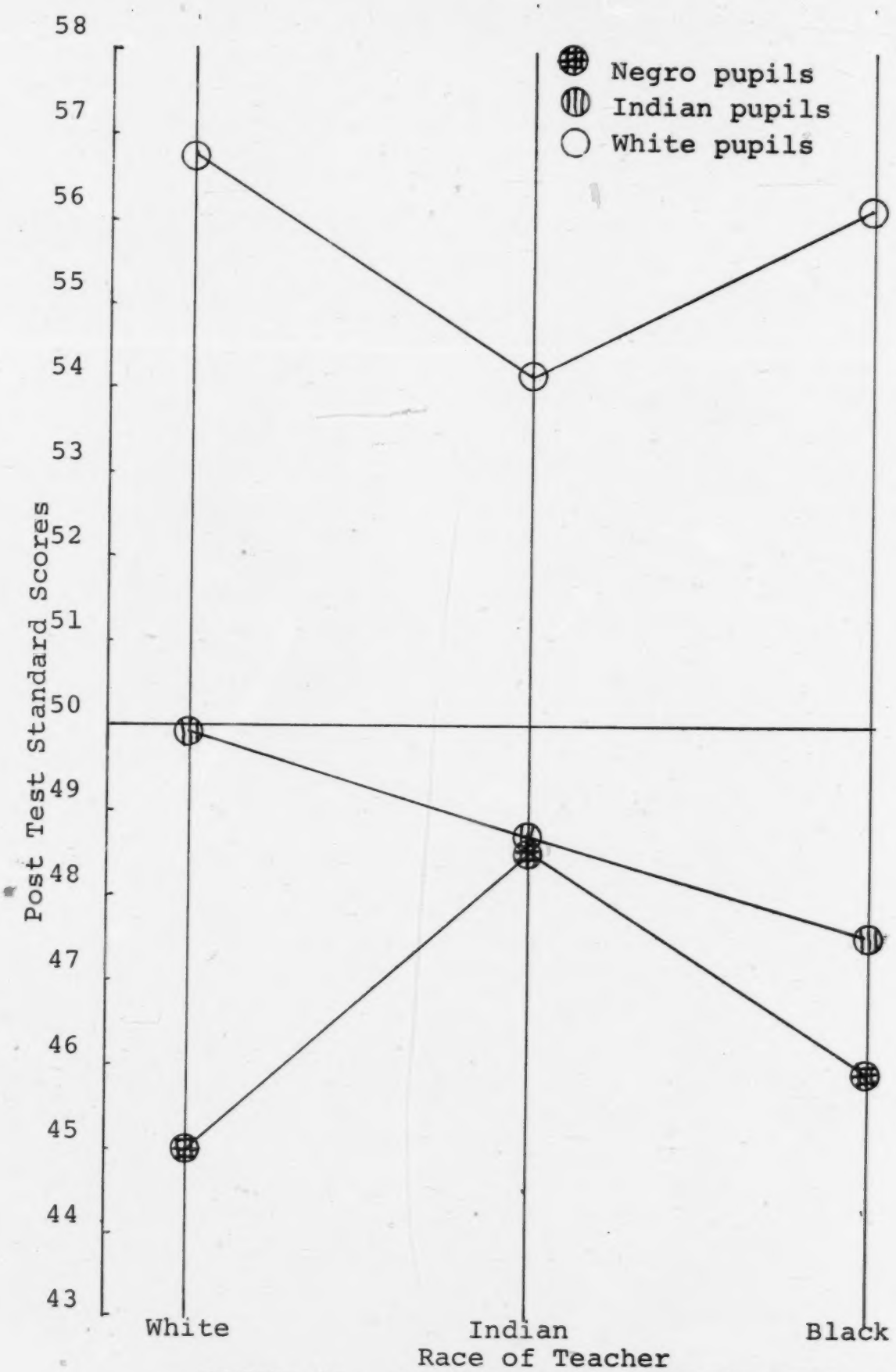


FIGURE 21: CALIFORNIA ACHIEVEMENT TEST
MATHEMATICS
(By Racial Group of Student and Teacher)

Table 21 presents the mean post-test scores and standard deviations on the C.A.T., mathematics subtest, standardized. The mean post-test score has been adjusted for the overall mean mathematics pre-test and C.T.M.M. scores.

Figure 22 shows graphically the mean standardized post-test scores for the C.A.T., mathematics subtest, by the race of the student and the race of his mathematics teacher. The post-test scores have been adjusted for the mean pre-test and C.T.M.M. scores.

When each student's post-test mathematics score was adjusted for the overall mean mathematics pre-test and C.T.M.M. scores, it was found that:

(1) As in language black students had a significantly higher mathematics score. The level of significance was at the 0.01 level.

(2) The mathematics scores of the students were independent of the race of their mathematics teacher.

(3) There was no significant interaction between the race of the student and the race of his mathematics teacher which affected the student's score in mathematics.

TABLE 21

MEANS, AND STANDARD DEVIATIONS OF STANDARDIZED POST-TEST SCORES, ADJUSTED FOR PRE-TEST AND C.T.M.M. SCORES, C.A.T. MATHEMATICS SUB-TEST FOR EACH STUDENT-TEACHER RACIAL PARING

RACIAL GROUP STUDENT/TEACHER	ADJUSTED SCORE	S.D.
WHITE/WHITE	49.5	2.7
WHITE/INDIAN	50.1	9.6
WHITE/NEGRO	48.8	4.2
INDIAN/WHITE	49.0	5.6
INDIAN/INDIAN	49.7	13.6
INDIAN/NEGRO	49.8	6.4
NEGRO/WHITE	49.9	2.6
NEGRO/INDIAN	52.4	9.3
NEGRO/NEGRO	50.1	3.2

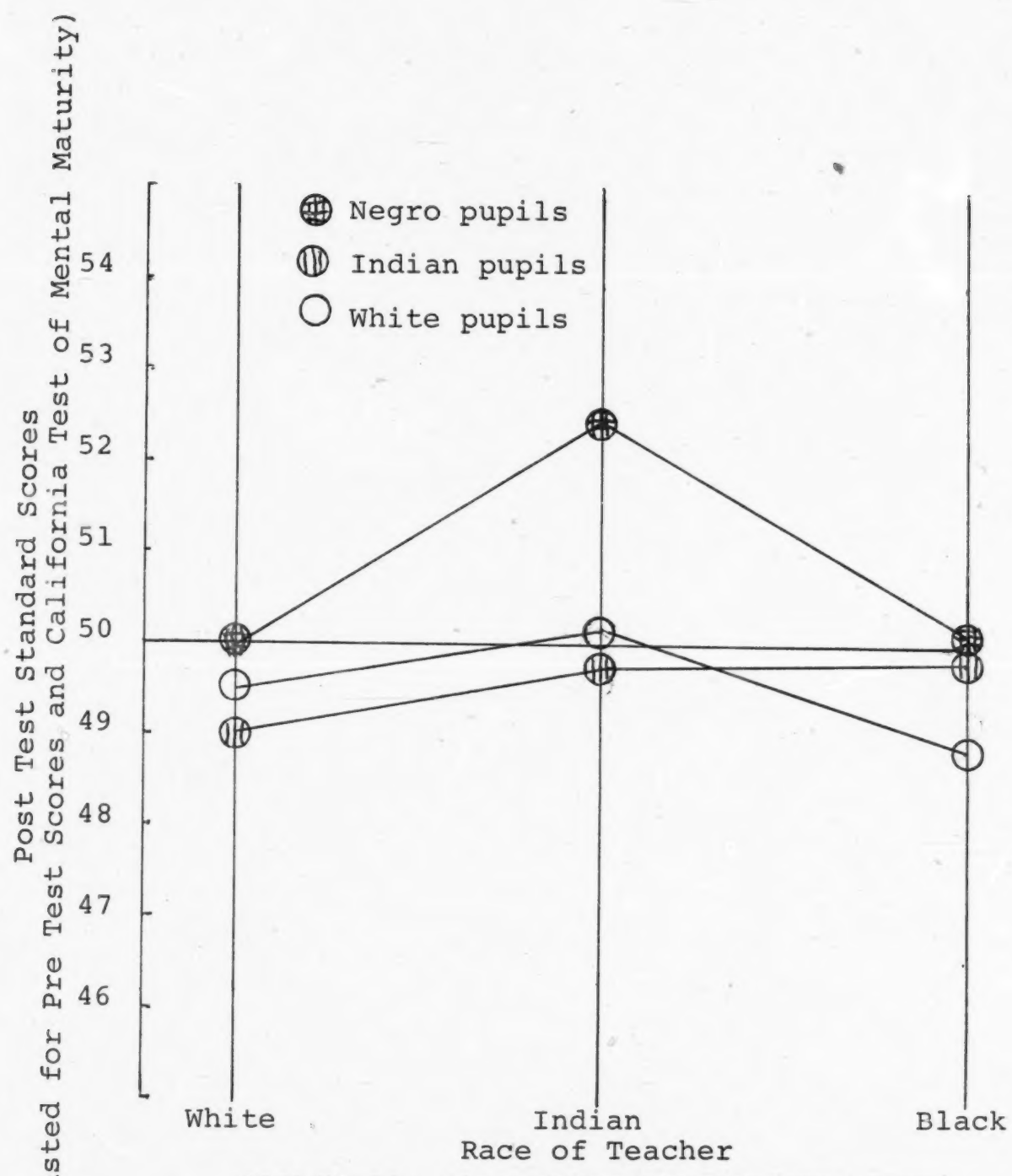


FIGURE 22: CALIFORNIA ACHIEVEMENT TEST
MATHEMATICS
(By Racial Group of Student and Teacher)

A Discussion of Student Achievement, Teacher Effectiveness, and Student-Teacher Interaction.

Black students performed better after integration than they did before integration. White and Indian students experienced no negative effects in achievement from integration. Similar results were found by Stallings (1959) and Hansen (1960). Stallings reports that after one year of integration in the public schools of Louisville, Kentucky substantial gains in scholastic achievement were made by black children. The white children of Louisville experienced no negative effects in scholastic achievement from integration. Hansen reports that after five years of integration in the Washington D.C. schools,

> The Negro pupils in our schools have, on the whole, performed somewhat better during the past five years,...
>
> ...white pupils in our schools have on the whole, performed at least as well during the past five years,...

The hypothesis that relative to the students' ability and pre-test scores there would be no statistically significant difference in the academic performance of the students between ethnic groups is rejected for language and mathematics. Relative to their ability and pre-test scores black students had a significantly higher language and mathematics score. Wilson (1966) considered the relative importance of individual and school social class for white and black students separately and found that the student environment had a stronger relationship to the performance of black students than did the student's own

family background. White students' performance, although strongly related to the social class level of the fellow students, was more closely related to the student's own family background. Coleman (1967) also found that black students were more sensitive to variations in the school environment than were the white students. It is the belief of the writer that relative to their ability black students performed better because of the higher school social class which they experienced after integration.

The hypothesis that relative to the students' ability and pre-test scores there would be no statistical significance in how each ethnic group of teachers would effect student performance is accepted.

The hypothesis that relative to the students' ability and pre-test scores there would be no statistically significant interaction between the race of the student and the race of the teacher which would effect the students' academic achievement, is rejected for language. In language, black students with an Indian English teacher had a higher mean achievement score than black students with a black or white English teacher, but Indian students had a lower mean achievement score if taught English by an Indian teacher than they had if taught English by a white or black teacher.

Tables 17, 19, and 21 suggest black and white students, relative to their ability and pre-test scores, performed better academically if taught by an Indian teacher. The tables also propose that students taught by Indian teachers had more free-

dom to achieve at their desired pace. This writer is of the opinion that in most classrooms the more able students are not allowed the freedom to achieve at their potential.

Indian students, relative to their ability and pre-test scores, performed lower academically if taught by an Indian teacher. Lumbee Indians are not allowed the freedom to interact socially with the local whites of Hoke County. In an effort to interact socially with whites they hide their Indian identity whenever possible. This is evidenced by the many Lumbee Indians who leave the area and divorce themselves from any Indian identification. The writer believes the Indian students of Hoke County performed better academically for white and black teachers in an effort to lose their identity and become accepted by the majority.

Suggestion for Further Research

The results of this study indicate a desirability to do research in the following areas:

(1) The present study should be continued on a longitudinal basis. This continuation will aid in determining whether or not the findings of this study persist and will aid in determining post-integration learning data on each of the races.

(2) Longitudinal studies of the same nature should be conducted in other integrated school systems to validate the present findings and to determine whether these findings occur under varying social and economic circumstances.

(3) Longitudinal studies of the same nature should be conducted in integrated school systems for grade levels one through five to determine how children at different grade levels respond to integration of both student bodies and faculties.

(4) Longitudinal studies of the same nature should be conducted in schools with a variety of racial balance contexts to determine whether or not there is a critical percentage of black student enrollment which would have a negative influence on the academic achievement of white students.

CHAPTER V

Summary and Conclusions

Summary

The purpose of this study was to test the hypotheses that:

(1) relative to the students' ability, there would be no statistically significant difference in the academic performance of the students between ethnic groups.

(2) relative to the students' ability, there would be no statistically significant difference in how each ethnic group of teachers would effect student performance.

(3) relative to the students' ability there would be no statistically significant interaction between the race of the teacher and the race of the student which would effect the students' academic achievement.

The subjects of this study were 608 Caucasian students, 127 American Indian students, and 680 Negro students for a total sample size of 1415 students. The 1415 pupils used in this study were enrolled in grades six through twelve of the public school

system of Hoke County North Carolina during the 1968-69 school year.

The research procedure involved the administration of the California Achievement Test in grades 6 through 12 in October of 1968. This provided base-line information against which student progress was measured. The California Achievement Test was readministered along with the California Test of Mental Maturity at the close of the Spring semester of 1969. The subjects of this study completed both testings of the California Achievement Test and the California Test of Mental Maturity.

The California Achievement Test and the California Test of Mental Maturity were given by the homeroom teachers and were machine-scored by California Test Bureau.

In comparing the regression lines of each race in the school system before and after integration t statistics were used. To answer the three major hypotheses the analysis of covariance was used. The students' pre-test and California Test of Mental Maturity scores were the covariables.

Conclusion

1. The differences between mean IQ scores for blacks, Indians, and whites in this study are in essential agreement with the results of many other studies.
2. The differences between mean achievement scores for blacks, Indians, and whites in this study are in essential agreement with the results of many other studies.
3. The differences between mean achievement scores for males and females in this study are in essential agreement with the results of many other studies.
4. Students who had been retained in a grade have a lower mean achievement score than students who had not been retained. The difference is greater for grade twelve than for grade six, and the negative effect of grade retention is greater for whites than for blacks.
5. Black students performed better after integration than they did before integration. White and Indian students experienced no negative effects in achievement from integration.
6. The hypothesis that relative to the students' ability and pre-test scores there would be no statistically significant difference in the academic performance of the students between ethnic groups is rejected for language and mathematics. Relative to their ability and pre-test scores black students had a significantly higher language and mathematics score.
7. The hypothesis that relative to the students' ability and

pre-test scores, there would be no statistical significance in how each ethnic group of teachers would effect student performance, is accepted.

8. The hypothesis that relative to the students' ability and pre-test scores there would be no statistically significant interaction between the race of the student and the race of the teacher which would affect the students' academic achievement, is rejected for language. In language, black students with an Indian English teacher had a higher mean achievement score than black students with a black or white English teacher, but Indian students had a lower mean achievement score if taught English by an Indian teacher than they had if taught English by a white or black teacher.

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BIOGRAPHY

Waltz Maynor, an American Indian, was born in Pembroke, North Carolina, February 21, 1933. He entered Pembroke State College in September of 1956 and was graduated in June, 1959 with a B.S. degree in Mathematics. Mr. Maynor was chosen as the most outstanding mathematics student in his freshman class, and he was elected to Who's Who in American Colleges and Universities in 1959. He served as a mathematics teacher at Oxon Hill Senior High School, Oxon Hill, Maryland during the 1959-1960 and 1961-1962 school years. During the 1960-61 school year, Mr. Maynor attended a National Science Foundation Institute for high school mathematics teachers at the University of North Carolina at Chapel Hill. In 1961-62 he received a Superior Teacher award in Oxon Hill. From 1962-1965, he served as a mathematics-science teacher at Fairgrove High School, Fairmont, North Carolina. He then entered the Graduate School of Appalachian State University in September of 1963 and was graduated in August, 1965 with an M.A. degree in mathematics. He served as a mathematics teacher at Sandhills Community College, Southern Pines, North Carolina, during the 1965-67 school years. He was an Assistant Professor of mathematics at Pembroke State University, Pembroke, North Carolina during the school year 1967-68. He entered the Graduate School of Arts and Sciences of Duke University in July, 1968, and was elected to Kappa Delta Pi in 1969. In July, 1969, he accepted a Research Internship at the North Carolina Advancement School, a position which he holds at the present time.